

MF-2350

User Guide

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NOTICES & SAFETY INFORMATION

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Trademark recognition

All product names used in this manual are the properties of their respective owners and are acknowledged.

Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment onto an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

- Shielded interconnect cables and a shielded AC power cable must be employed with this equipment to ensure compliance with the pertinent RF emission limits governing this device. Changes or modifications not expressly approved by the system's manufacturer could void the user's authority to operate the equipment.

Declaration of conformity

This device complies with part 15 of the FCC rules. Operation is subject to the following conditions:

- This device may not cause harmful interference
- This device must accept any interference received, including interference that may cause undesired operation.

Safety information

Before installing and using the OT-100, take note of the following precautions:

- **SAR compliance for body-worn operations** requires at least 2 cm of separation between the device and the user's body
- **Request service for damaged products:** Turn off the product, unplug it from the electrical outlet, and request service from a service partner under the following conditions:
 - The power cord or plug is damaged
 - Liquid has been spilled into the product
 - An object has fallen into the product
 - The product has been exposed to rain or water
 - The product has been dropped or damaged
 - The product does not operate normally when you follow the operating instructions
- **Avoid hot areas:** The product should be placed away from heat sources such as radiators, heat registers, stoves, and other products (such as amplifiers) that produce heat.
- **Allow the product to cool:** Allow the product to cool before removing covers and touching internal components.
- **Avoid wet areas:** Never use the product in a wet location.
- **Avoid inserting objects into product:** Never insert objects of any kind into slots or other openings in the product.
- **Clean the product properly:** Unplug the product from the wall outlet before cleaning it. Do not use liquid cleaners or aerosol cleaners. Use a soft cloth dampened with water for cleaning exterior components, but NEVER apply water directly to the product or to an LCD

screen.

- **Use the product with approved equipment:** Use your product only with the computers and accessories identified as suitable for use with your product.
- **Adjust the volume:** Turn down the volume before using headphones or other audio devices.

Device storage

- When device will not be used for a long period of time, please remove the battery, place product in a dry box, and store both device and battery in a cool, dark, and dry place.
- Batteries in storage need to be recharged at least once every three months to avoid degradation.

Battery handling precautions

- **Do not attempt to disassemble or reconstruct the packs.** The battery has integrated protection circuits and safety functions to avoid danger. If battery is damaged, it may rupture, generate heat, or cause smoke and flame.
- **Do not short circuit battery.** Neither short connect the positive terminal and negative terminal with metals, nor carry or store the battery with metal objects. If the battery is short circuited, excessive large current will flow and generate heat, rupture or flame will occur, and also it will cause heat generation for metals. Please cover the plug with waterproof cap when not using the battery.
- **Do not incinerate or heat the battery.** This will cause the insulator to melt, damage the gas release vent, and cause loss of safety function, or electrolyte ignition. Above mentioned matters will cause battery to rupture, generate heat, or cause smoke and flame.
- **Do not use near high temperature areas.** Do not use or leave battery near fire, stove or heated areas of more than 80°C, to avoid melting of the polymer separator which would cause internal short circuits to occur in individual cells, and cause the battery to rupture, generate heat, or cause smoke and flame.
- **Do not immerse the battery in water, seawater, or get it wet.** This may cause internal short circuits to occur within individual cells, and cause the battery to rupture, generate heat, or cause smoke and flame.
- **Do not charge battery near fire or under the blazing sun.** If the battery protection circuit does not function properly due to high temperature, or it is broken, the battery will be charged at an abnormal current, and abnormal chemical reaction may occur, causing the battery to rupture, generate heat, or cause smoke and flame.
- **Only use the official product charger and observe the charging requirement.** If the

battery is charged in unusual conditions, it will cause loss of safety functions, or abnormal chemical reactions, causing the battery to rupture, generate heat, or cause smoke and flame.

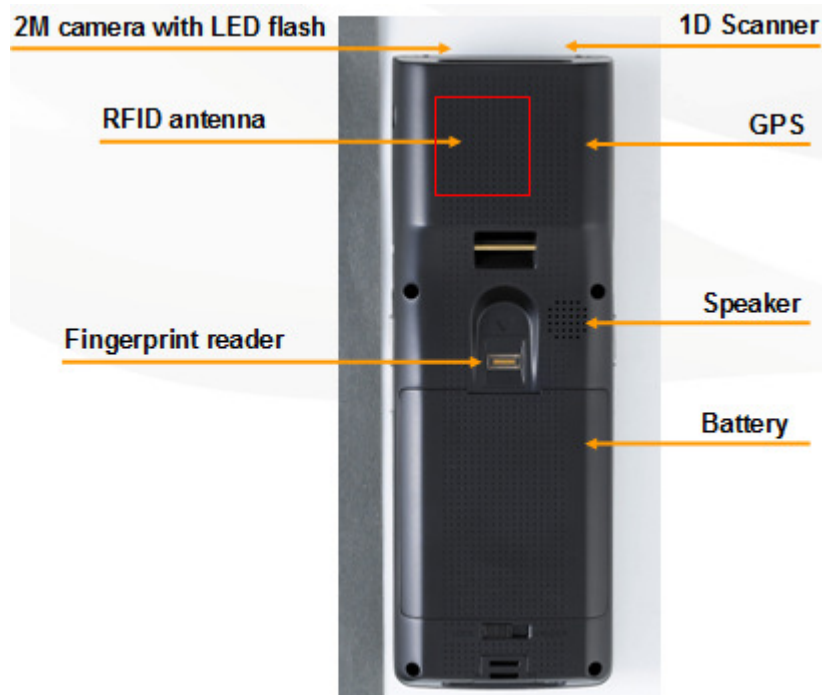
- **Do not try to damage the battery.** Do not drive a nail into the battery, strike it with a hammer, or tread on it. The impact will cause leakage, causing the battery to rupture, generate heat, or cause smoke and flame.
- **Do not attempt to solder anything onto the battery.** This will cause the insulator to melt due to heat, or cause the gas release vent to break, causing the battery to rupture, generate heat, or cause smoke and flame.
- **Do not connect battery to a plug socket or car-cigarette plug.** Connecting high voltage to the battery, means excessive current will flow in it, and cause the battery to rupture, generate heat, or cause smoke and flame.
- **Do not use battery for powering other equipment.** If the battery is used for powering other equipment, it will deteriorate its performance and cycle-life. At worst, abnormal current will flow, and cause the battery to rupture, generate heat, or cause smoke and flame.
- **Do not touch a leaked battery directly.** If battery leaks and hands touch leaked electrolyte, wash your hands with soap immediately. If leaked electrolyte gets into your eyes, do not rub them, and wash eyes immediately with fresh water. Consult a doctor immediately.
- **Do not continue to charge over specified time.** If the battery has not finished charging over recommended time, let it stop charging. There is a possibility that the battery might be defective, and continued charging may cause the battery to deform, generate heat, or cause smoke or flame.
- **Do not insert battery into a microwave or high pressure container.** This may cause battery to deform, generate heat, or cause smoke or flame, because of sudden heat, intense pressure, or damage to the sealing condition of the battery.
- **Do not put leaked battery near fire.** If liquid leaks from the battery, or the battery give outs a bad smell, do not leave battery near flammable objects. Otherwise, the electrolyte leaked from battery will catch on fire.
- **Do not use an abnormal battery.** If battery has a bad smell, changes color, deforms, or causes something wrong during usage, remove it from equipment or charger, and do not use. If an abnormal battery is used, it may cause battery to rupture, generate heat, or cause smoke and flame.

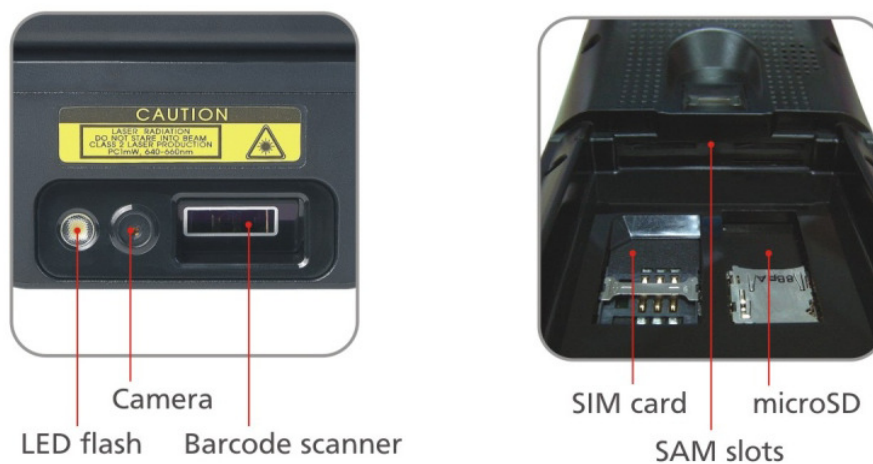
BOX CONTENTS

- MF-2350 device
- AC adaptor and power cord
- Battery
- Stylus
- Hand strap
- Device-to-PC USB cable
- Screen protection film
- Paper roll

OVERVIEW

List of features





MF-2350 device includes the following features.

Standard Features	Optional Features
2" Thermal Printer WiFi 802.11 b/g Bluetooth Class2 MSR 3-track reader Integrated microphone	IC card reader Quad-band GSM/GPRS RFID 13.56MHz reader Barcode scanner (1D) GPS Camera Fingerprint scanner

COM port sharing

Some functions share COM ports, and therefore cannot be used simultaneously.

Module	COM port	Comment
Barcode scanner 1D	COM1	
MSR IC card Printer	COM5	Shared
Bluetooth RFID	COM9	Shared
Cradle RS232	COM6	Shared
GPS		
GSM/GPRS		
	COM8	

Powering on/off

Device has three different power states: Off, Standby, and On. Below table shows how to power on/off, enter Standby mode, and wake-up from Standby mode.

Off → On	Press Reset pinhole
On → Off	Press and hold Reset pinhole for 5 seconds
On → Standby	Press Power key
Standby → On	Press Power key

Note: The first time you use device, it will be in Off mode.

Reset device

Device has soft reset and hard reset functions, as well as a factory default function.

ATTENTION: Factory default will erase all user files and settings!

Soft reset	Press Reset pinhole
Hard reset	Press Power key and Reset pinhole at the same time
Factory default	Press and hold Power key, and press Reset pinhole. Keep holding down Power key until message appears on screen to press the FUN key. Press the FUN key to do Factory Default, or press Reset to cancel.

Enabling backup battery

Backup battery is used to store Standby mode data when main battery is empty, or is removed. Backup battery can keep the information for 10 minutes. Charging of the backup battery is automatically done via AC adaptor, or when main battery is present.

To enable/disable the backup battery:

- 1) Remove main battery.
- 2) At the bottom left of the battery slot, there is a switch. Put switch towards the right side to disable backup battery. Put switch towards the left to enable backup battery.

Hot swap main battery

When Backup battery is enabled, hot swap of the main battery is possible.

- 3) Press Power key to enter Standby mode.
- 4) Remove main battery, and replace with another battery.
- 5) Press Power key to wake up device.

STANDARD FEATURES

Device Settings

Stylus

- 1) Start > Settings > Control Panel > Stylus.
- 2) In the *Double-tap* tab, adjust speed for double-tap by tapping/clicking in the grid.
- 3) In the *Calibration* tab, click on the *Recalibrate* button to calibrate stylus. Screen will display a point, use the stylus to click on the point as accurately as possible. A total of five points need to be clicked on for calibration.

Regional settings

- 1) Start > Settings > Control Panel > Regional Settings.
- 2) Select your locale in the pull-down list. This will change the display of certain information as shown at the bottom of the window.
- 3) You can also customize settings for display of Numbers, Currency, Time, and Date. To do this, click on the *Customize* button.

Backlight

- 1) Start > Settings > Control Panel > Backlight.
- 2) In the first tab (*Level*), you can adjust backlight setting for when device is using battery power, or for when device is using AC adaptor power.
- 3) In the second tab (*Backlight*), you can enable/disable if you wish backlight to turn off automatically after a certain period of time. You can configure settings for when device is using battery power, or for when device is using AC adaptor power.

Keypad lighting

- 1) Start > Settings > Control Panel > KeyPadLed.
- 2) Two choices are available:
 - Turn on keypad lighting when user presses any key, and lighting stays on.
 - Turn on keypad lighting when user presses any key, but lighting stays on only for a defined period of time.
- 3) Default setting is to turn on keypad lighting for 60 seconds when user presses button.

Button configuration

- 1) Start > Settings > Control Panel > Button_Configuration.
- 2) Click on a key in the list to select it.
- 3) Click on the *Find* button to select application you wish to associate to the key.
- 4) Click on the OK button on the top right side of the window to save setting.
- 5) To remove setting from a key, select the key in the list, then click on the *Empty* button.
- 6) To remove settings from all keys, enable checkbox *All Empty*, then click on the *Empty* button.

Printer

Printer language support

Printer supports fonts for the following languages:

- Latin based languages (English and all European languages)
- Traditional Chinese
- Simplified Chinese
- Japanese

Printer firmware update

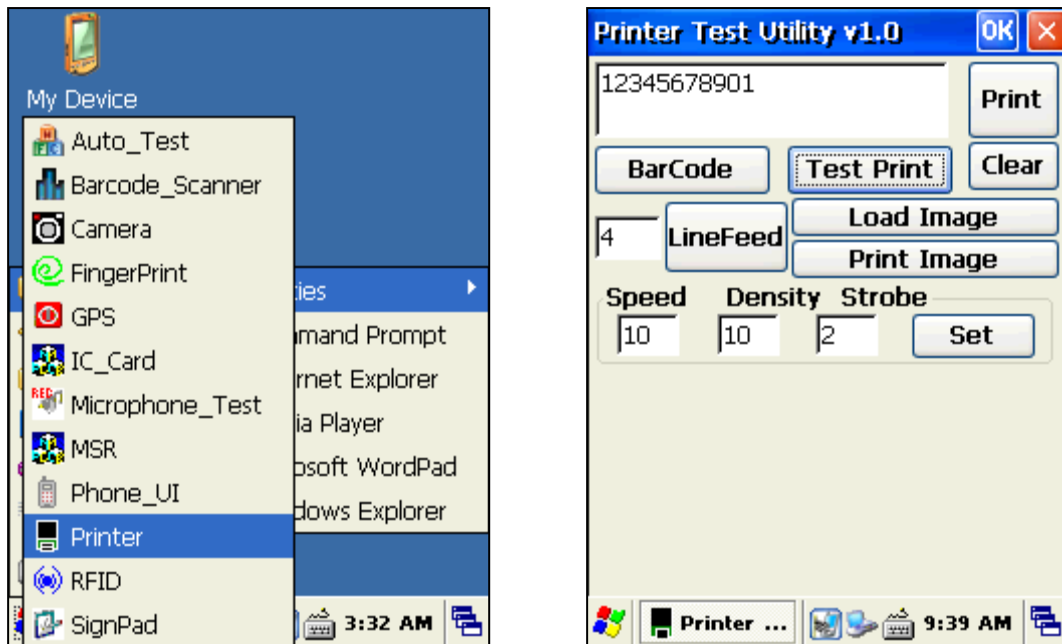
- 1) Double-click on My Device to open Explorer window.
- 2) In the menu bar on top of the screen, select View> Options. A pop-up window appears.
- 3) Uncheck box “Hide protected operating system files (Recommended)”
- 4) Click on the OK button in the pop-up window.
- 5) The *Windows* folder should have appeared in the Explorer window. Double-click on it.
- 6) Find and run the program *Printer_Update*
- 7) Click on the button ... to locate the printer firmware file. There are three types of file: firmware file, boot file, and font file. Depending on the file you load, please select one of the three radio boxes *Boot*, *F/W*, or *Font*.
- 8) Click on the *Auto Update* button. Upgrading starts, you should see the progress displayed underneath.
- 9) After upgrade is finished, the version number displayed should change. You may also click on the *Check version* button to refresh the version numbers.

Paper roll

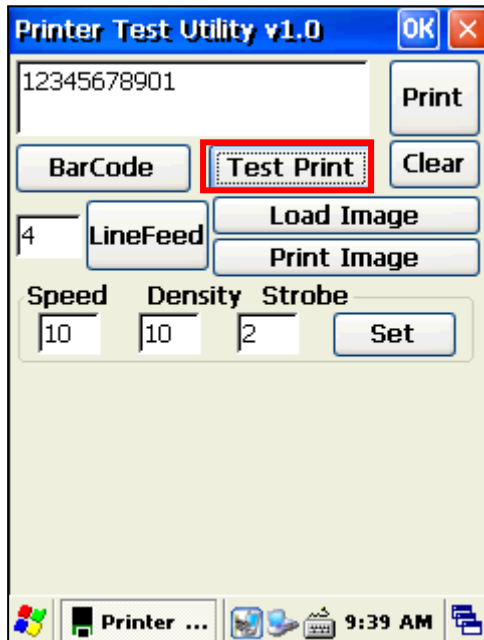
- 1) When device tries to print, but paper is not present, device will beep.
- 2) Open the printer cover.
- 3) Insert paper roll into slot. Make sure some paper is showing when printer cover is closed.
- 4) You can check paper roll level by looking through the transparent window on the right side of the printer.

Test utility

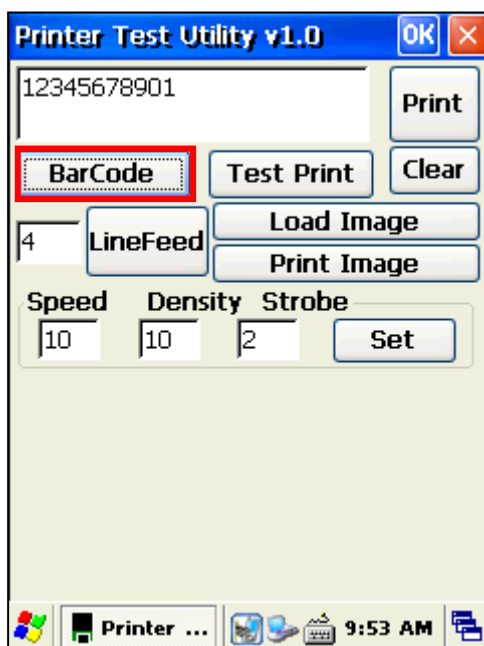
- 1) Start > Programs > Utilities > Printer. A test utility will appear (right).



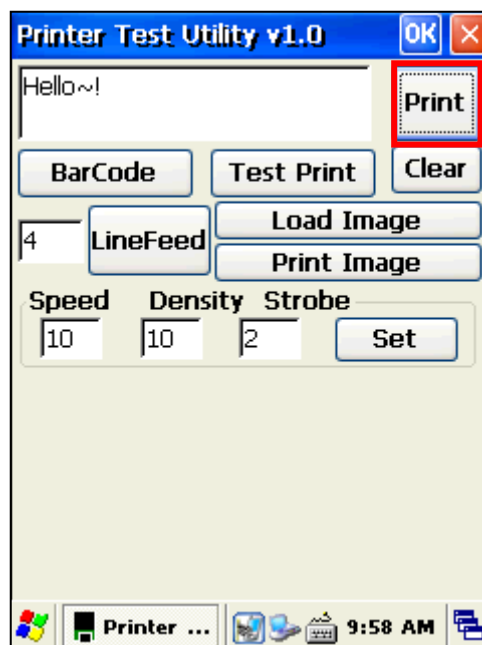
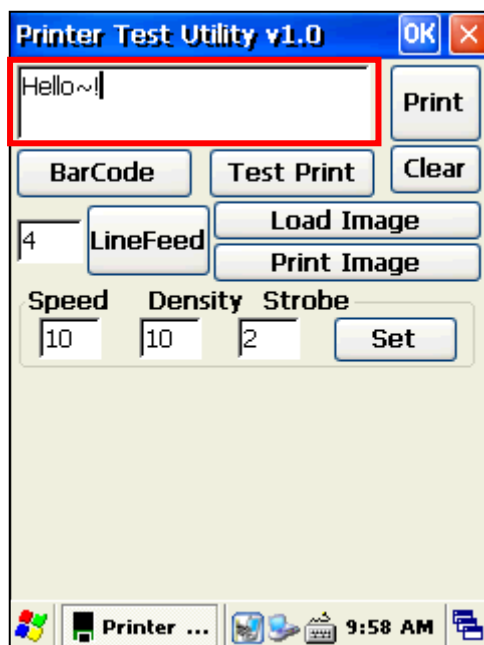
- 2) *Test Print* button: predefined test data will be printed.



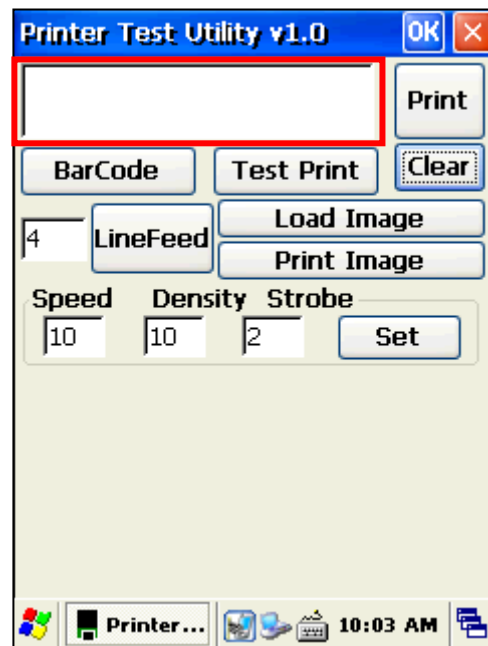
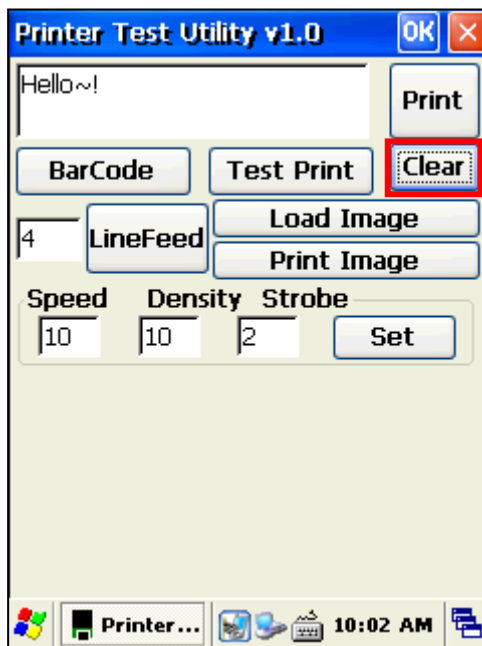
- 3) *BarCode* button: sample barcodes will be printed.



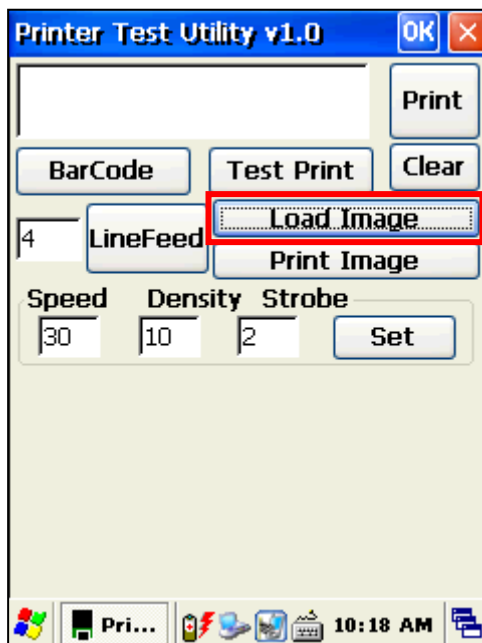
- 4) You can also enter text to print manually (left). Click *Print* button to print (right).



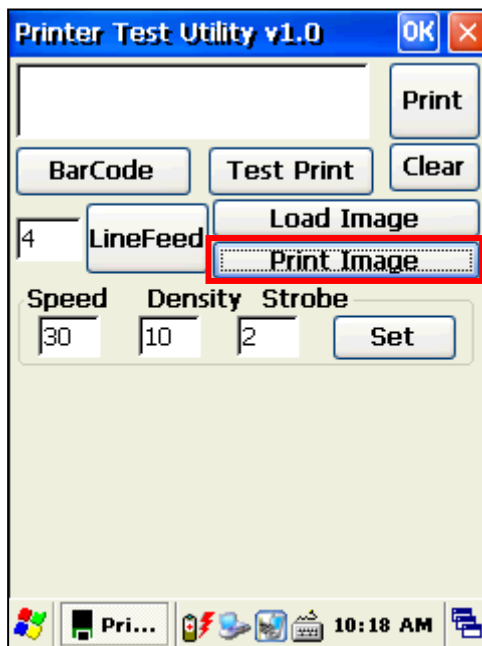
- 5) Click on the Clear button to erase the text field.



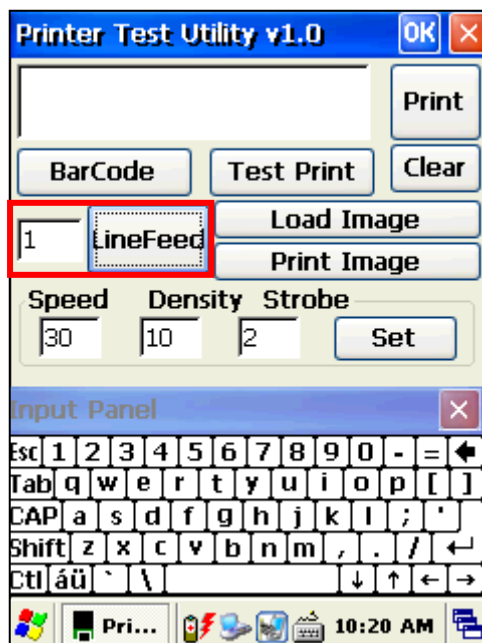
- 6) *Load Image* button: load the image that you want to print.



- 7) *Print Image* button: the image loaded will be printed.

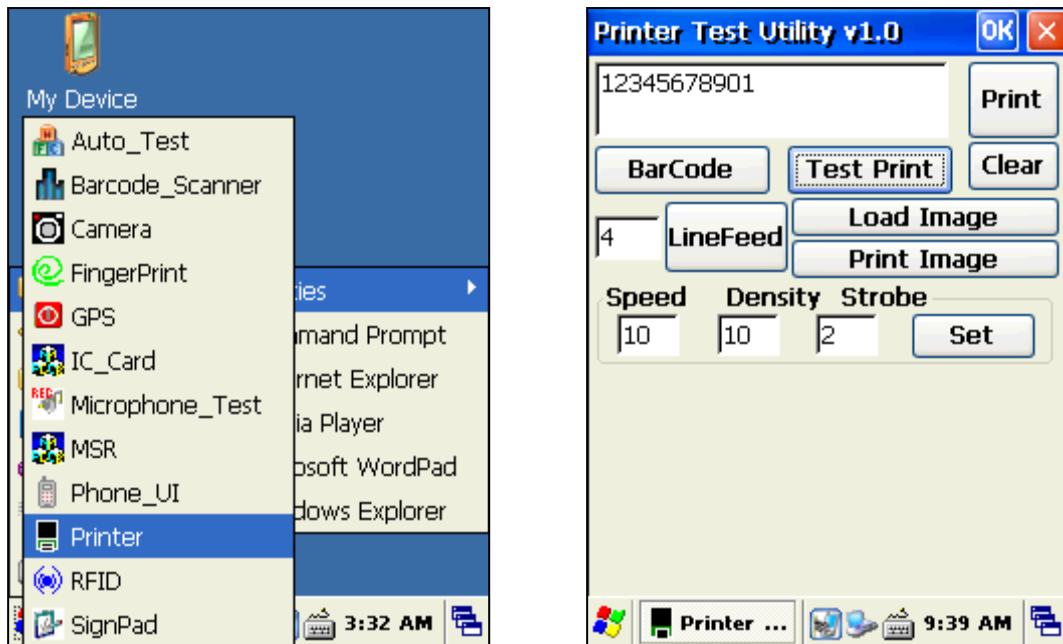


- 8) To line feed the paper, enter a value in the text area on the left side of *LineFeed* button. Then click on *LineFeed* button. Printer will blank print 0.125cm for each line.

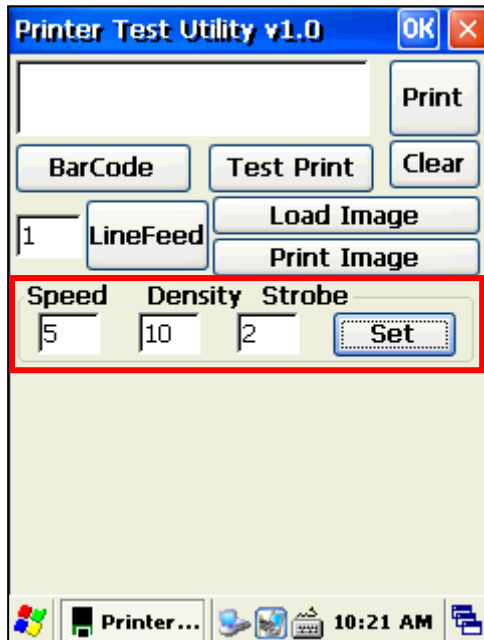


Printer settings

- 1) Start > Programs > Utilities > Printer. A test utility will appear (right).



- 2) Printing speed and density can be customized.



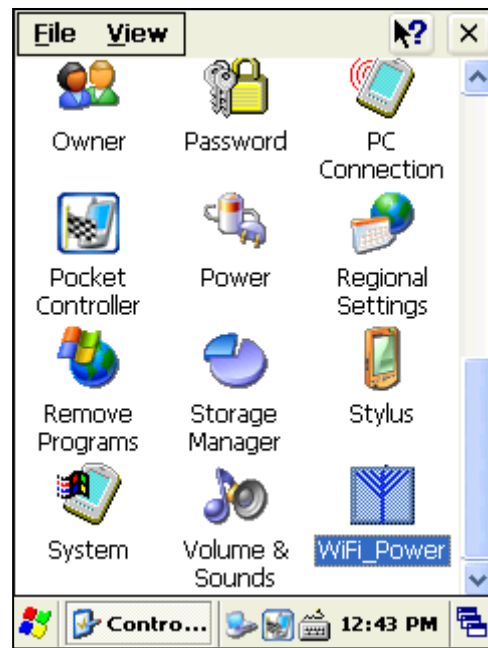
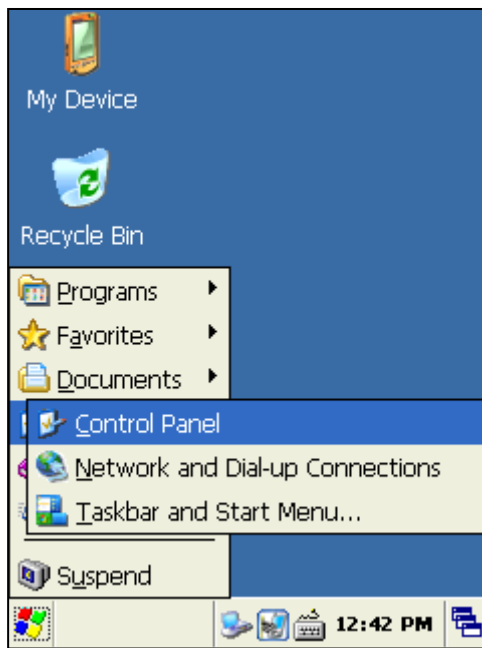
- 3) Speed: values between 1 (slowest) and 32 (fastest). Default is 22.
- 4) Density: values between 1 (darkest) and 4 (lightest). Default is 4.
- 5) Click on Set button to apply.

* Note: changing these settings will affect battery performance.

WiFi 802.11 b/g

Turn WiFi on/off

- 1) Start > Settings > Control Panel. Then double-click on WiFi_Power icon.

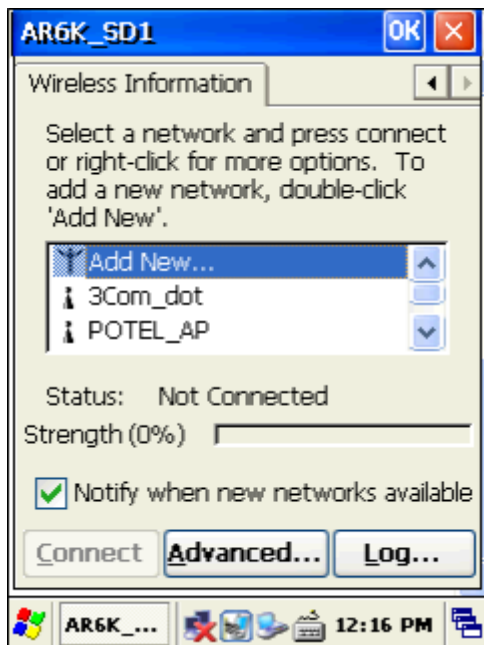


- 2) Select *WLAN On* (right pic) to turn WiFi on, or *WLAN Off* (left pic) to turn off WiFi.

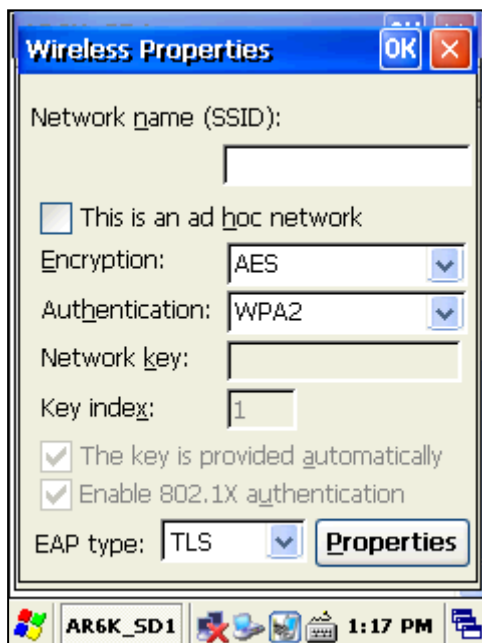


Connection settings

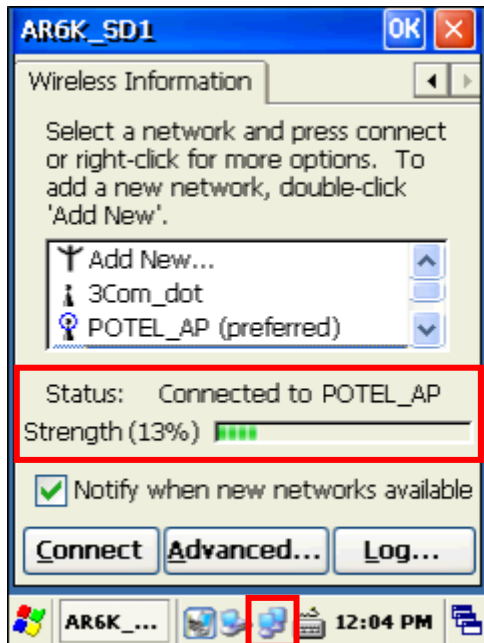
- 1) After WiFi is turned on, the window below should appear after a few seconds. Select a wireless network in the list and click on *Connect*, or click *Add New* to add new network.



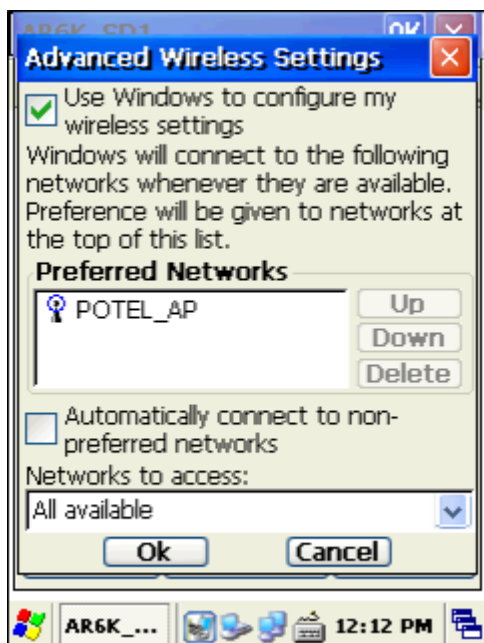
- 2) Select the encryption and authentication type. If required, please enter the network key of the wireless network. (Please consult your wireless network administrator for the network key). Click OK when finished.



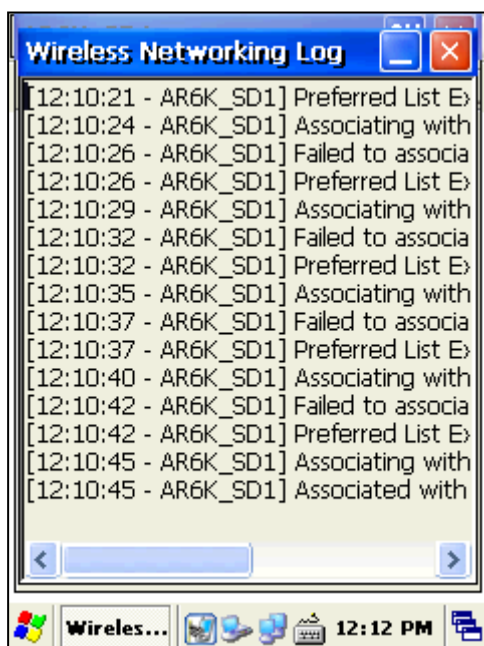
- 3) Status will show the connection status. When it says “Connected to [network]” this indicates connection was successful. Icon in the taskbar also shows connected. You can also view signal strength for connected wireless network. The strength of the signal will vary depending on the distance between device and the wireless access point.



- 4) Press *Advanced..* button to set the preferred network.

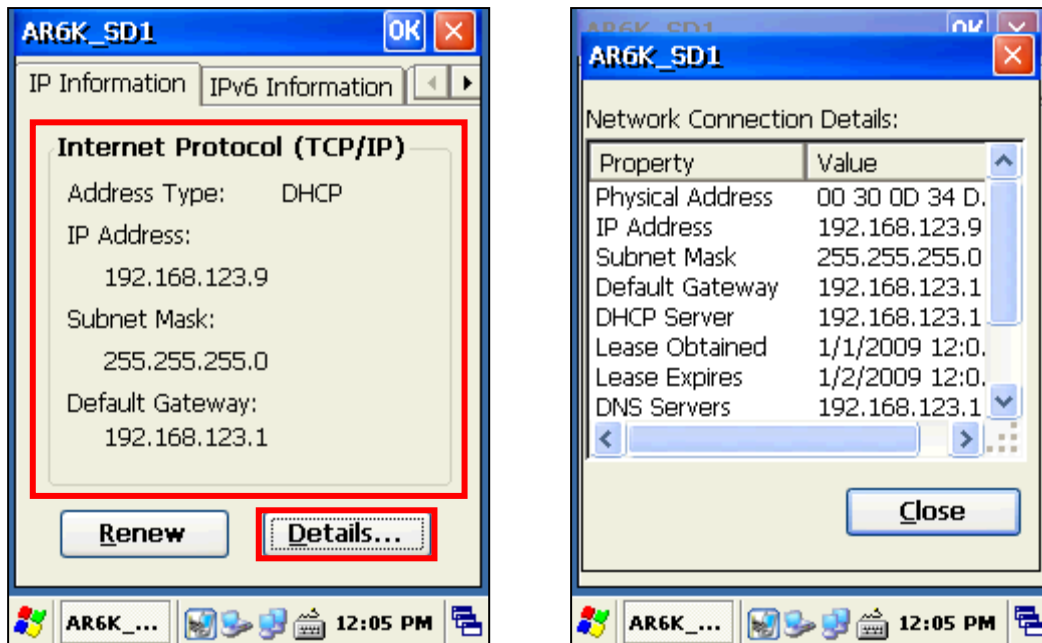


- 5) Press *Log..* button to check the connection log details.

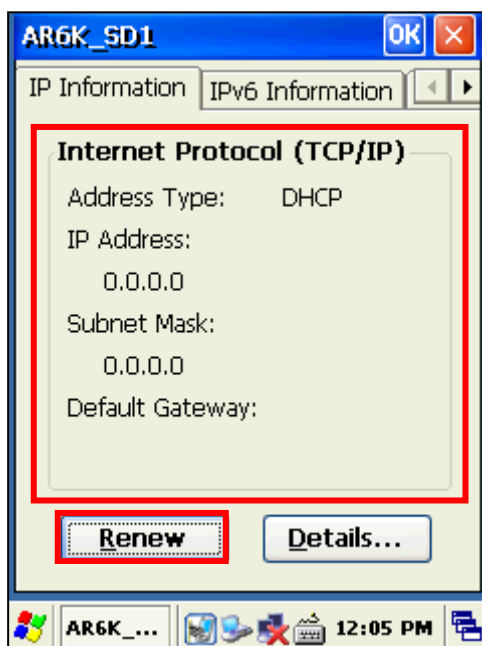


IP Information & MAC address

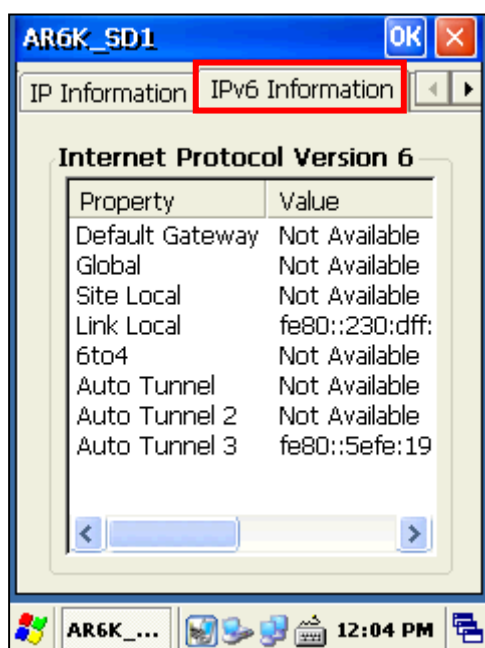
- 1) You can check IP information in the *IP Information* tab. Press *Details..* button to obtain more information, such as the MAC address of your WiFi hardware.



- 2) Press Renew button to reinitialize IP information. Device will request new IP address from the wireless access point. It may take a few moments for the new information to appear.

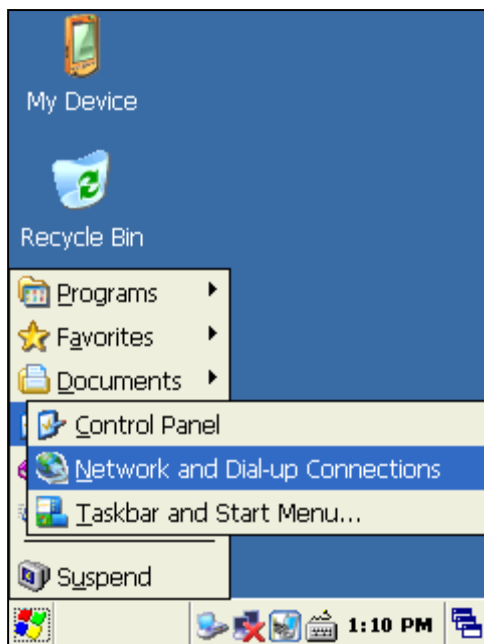


- 3) For IPv6 information, select the *IPv6 Information* tab.

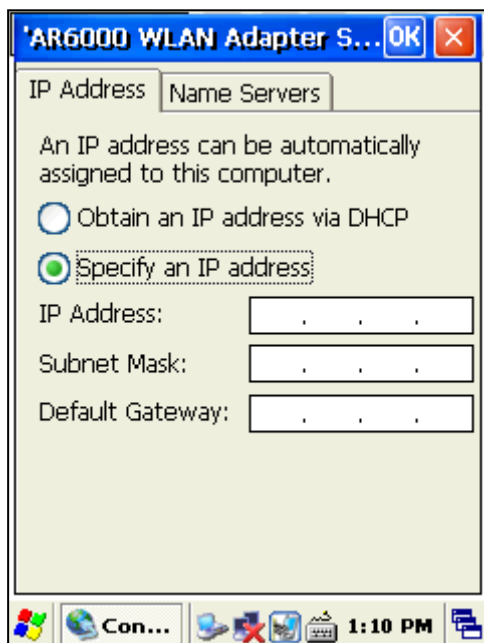


Setup IP address manually

- 1) Start > Settings > Network and Dial-up Connections



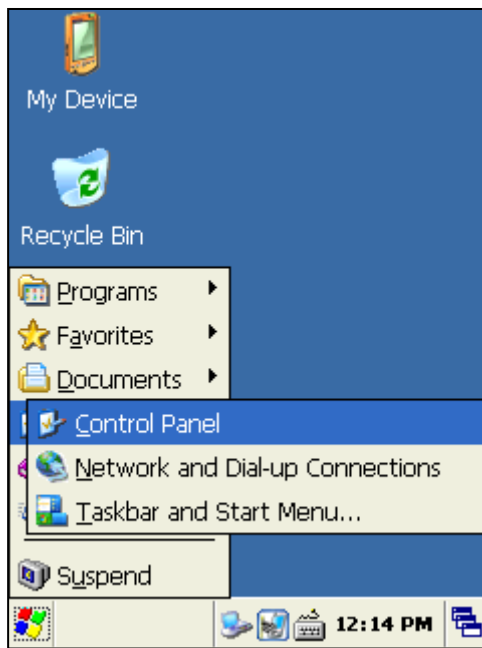
- 2) Select Specify an IP address and enter your IP address, subnet mask, and gateway information. Click on OK button to apply settings.



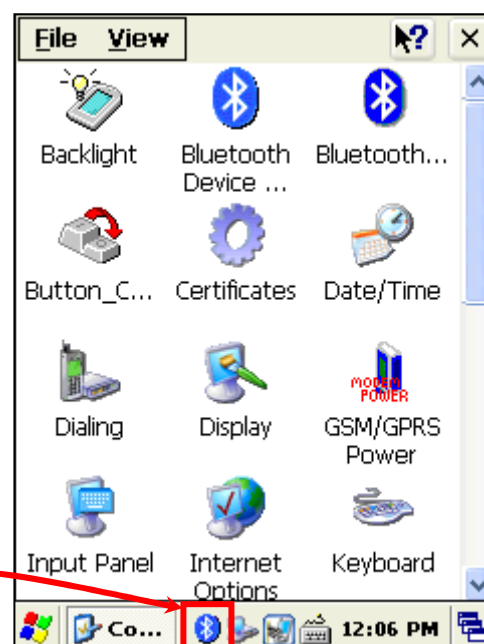
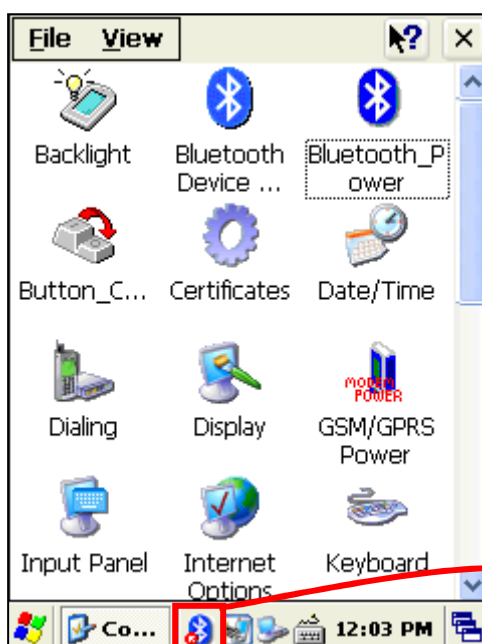
Bluetooth

Turn Bluetooth on/off

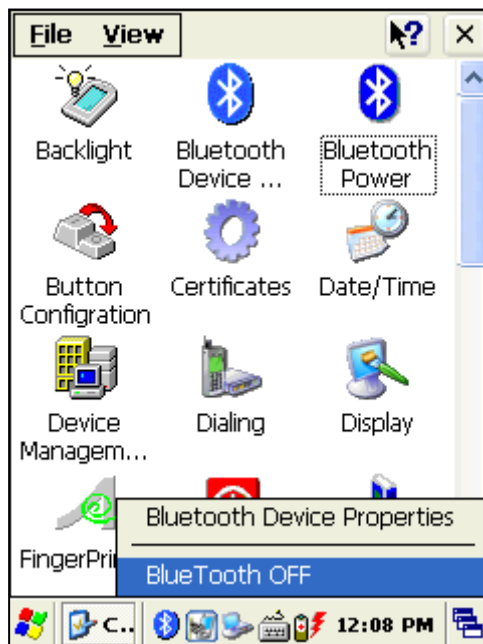
- 1) Start > Settings > Control Panel. Then double-click on Bluetooth_Power icon.



- 2) Tray icon appears in taskbar as disabled status (left). This is normal. After about 10 seconds, tray icon will change to show Bluetooth is enabled (right). Please note that RFID needs to be disabled for Bluetooth to activate, because they share the same COM port.



- 3) To turn off Bluetooth, right click on the taskbar icon. Select *Bluetooth OFF* as shown below. The taskbar icon will disappear.

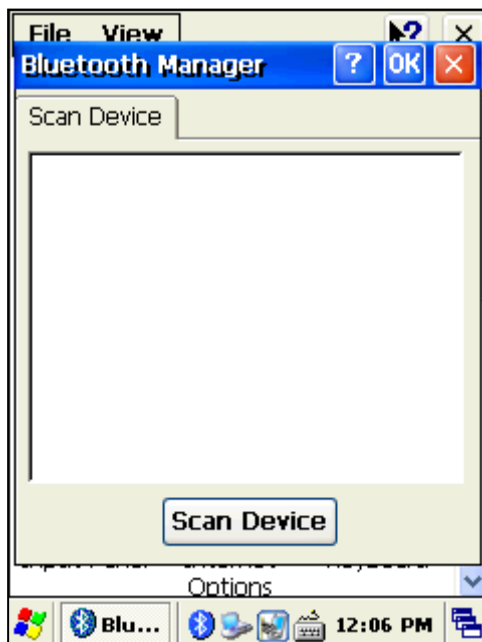


Search and connect Bluetooth devices

- 1) Right click on tray icon and select *Bluetooth Manager*. Or, you can also double-click on *Bluetooth Device Manager* icon in the Control Panel.



- 2) Click on *Scan Device* button. Bluetooth devices will appear in the list during the search.

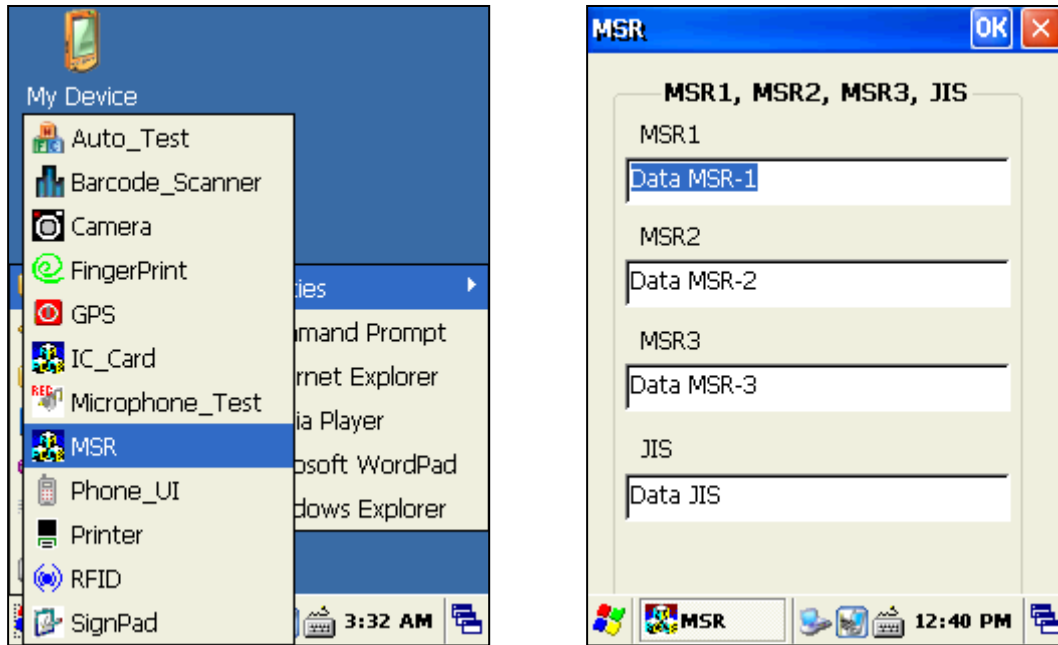


- 3) Right click on one of the devices to see possible actions (example: connect).

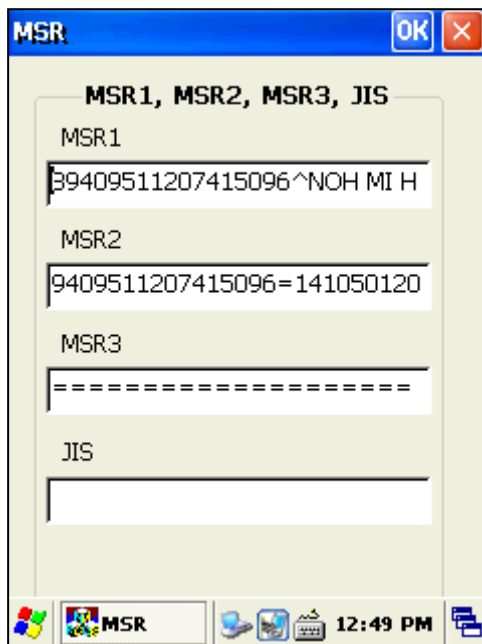
MSR

Using the MSR

- 1) Start > Programs > Utilities > MSR. A test utility will appear (right).



- 2) Physically swipe a magnetic card in device, and the track data will display onscreen.

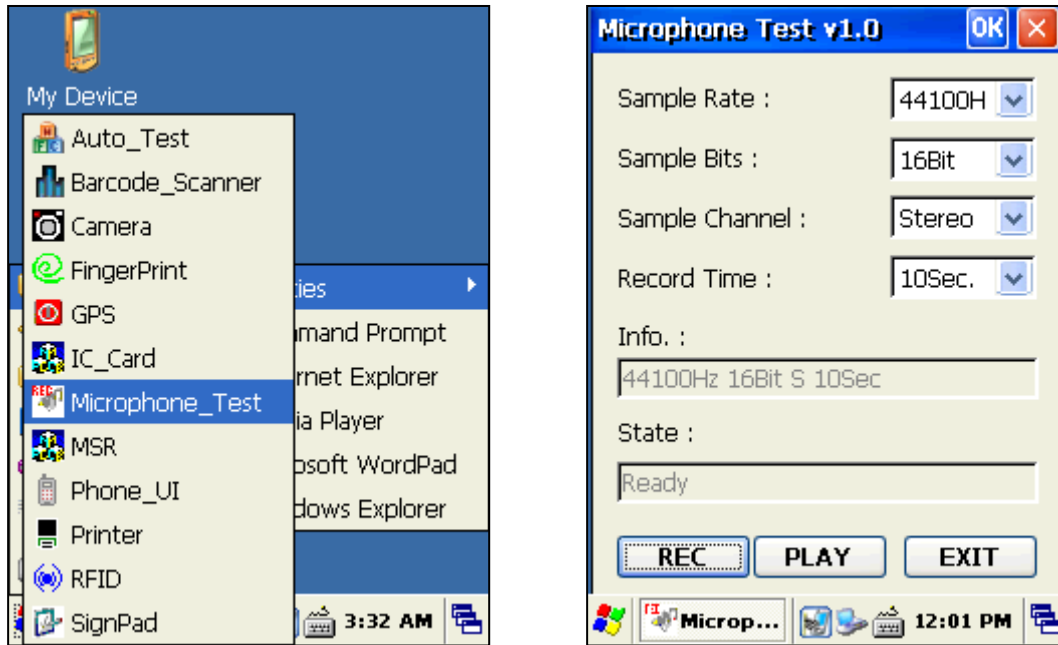


- 3) To close utility, click on the OK button or X button on the top right side of the window.

Microphone

Using the microphone

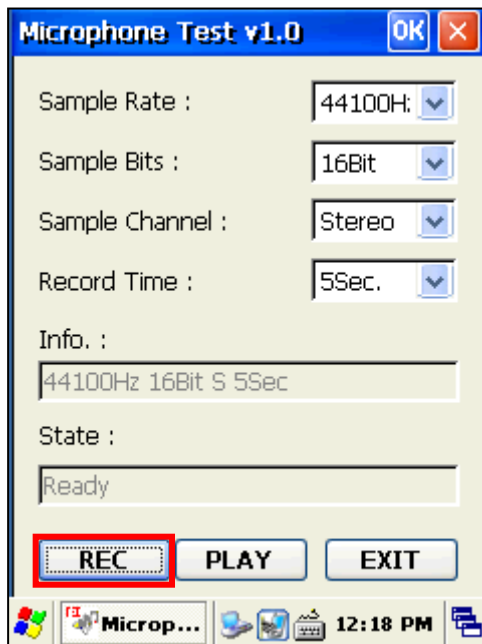
- 1) Start > Programs > Utilities > Microphone_Test. A test utility will appear (right).



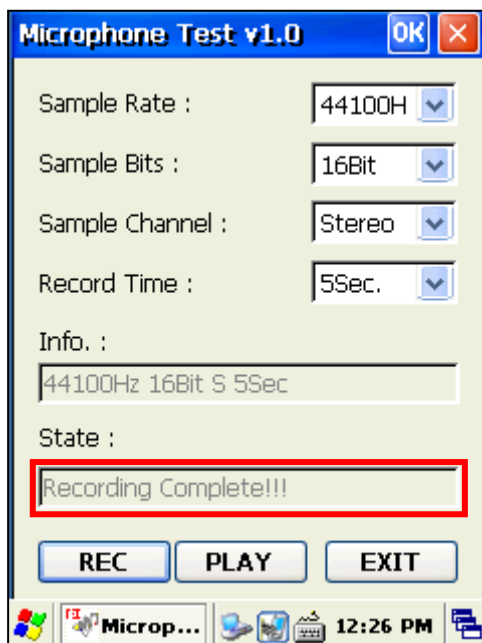
- 2) Select your recording settings sample rate, bits, channel, and recording time (left). A summary of your selection will be shown under *Info.* (right).



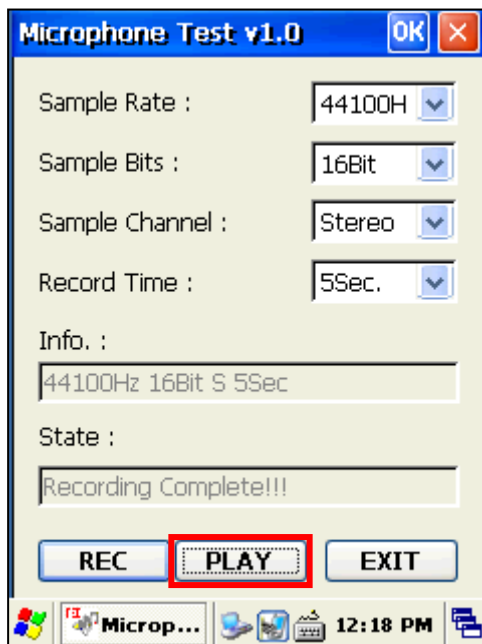
- 3) Press REC button to start recording. Speak normally. Please note that recording volume and quality will depend on how far you are from the device.



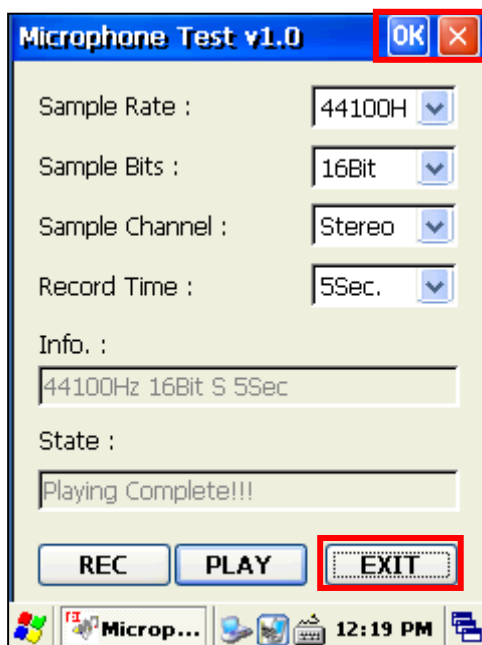
- 4) When recording is finished, the Status will be shown as below.



- 5) Press the Play button to listen to your recording. The recording can also be found in .WAV format in My Device root directory. If you wish to keep the .WAV file, please copy to another location, or it will be overwritten the next time you record.



- 6) To close utility, click on the Exit button, or the OK button, or the X button on the top right side of the window.

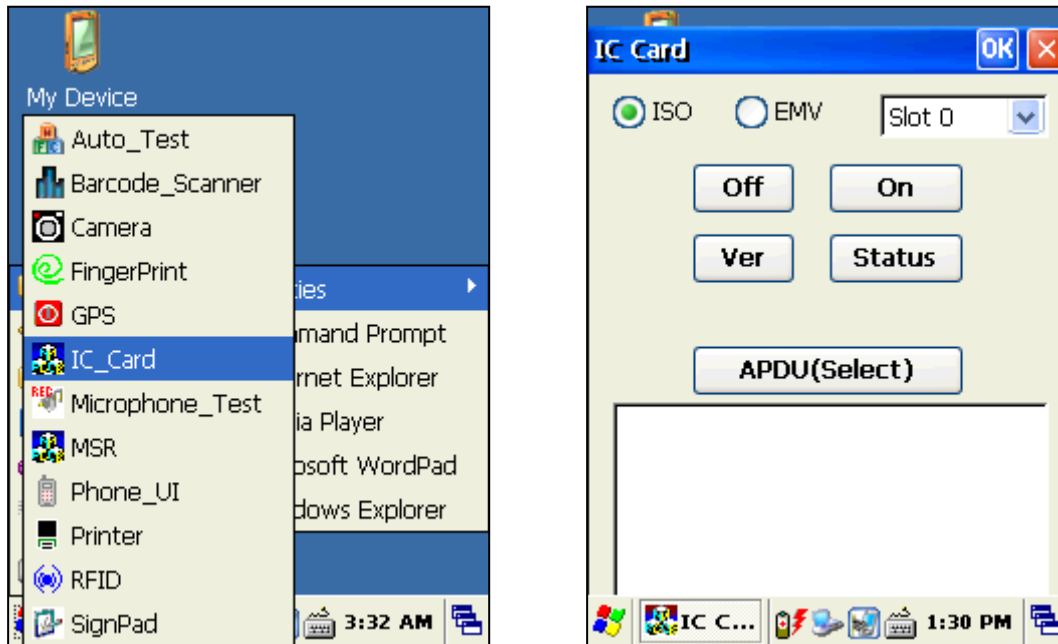


OPTIONAL FEATURES

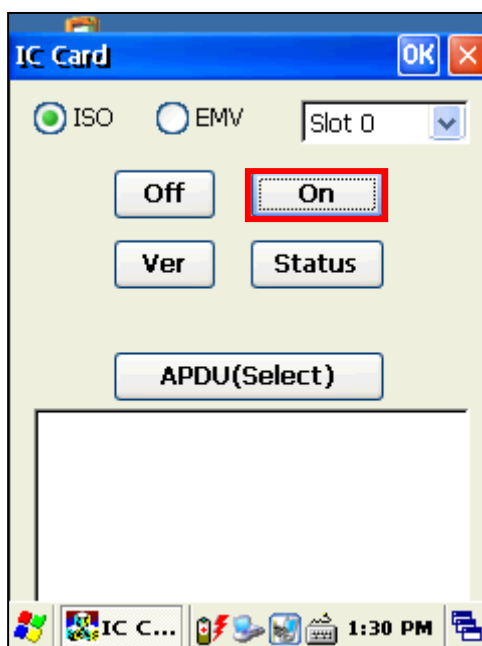
IC card

Using the IC card reader

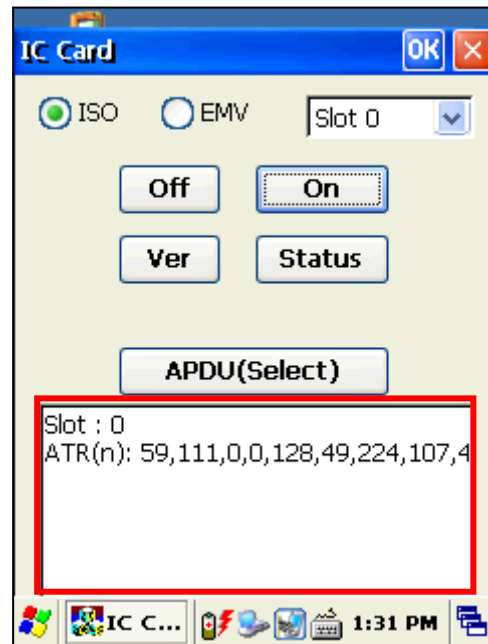
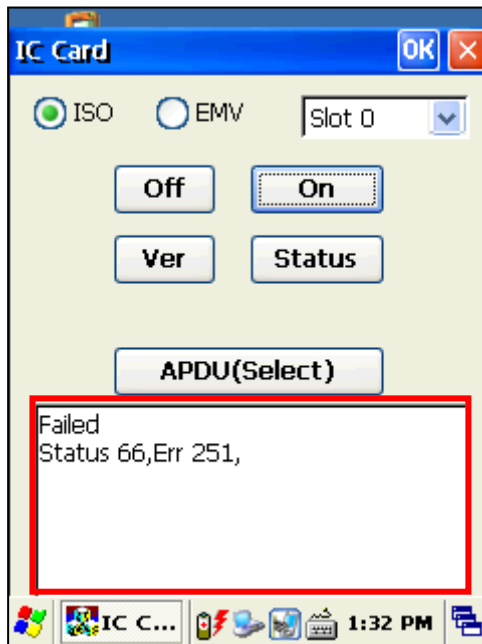
- 1) Start > Programs > Utilities > IC_Card. A test utility will appear (right).



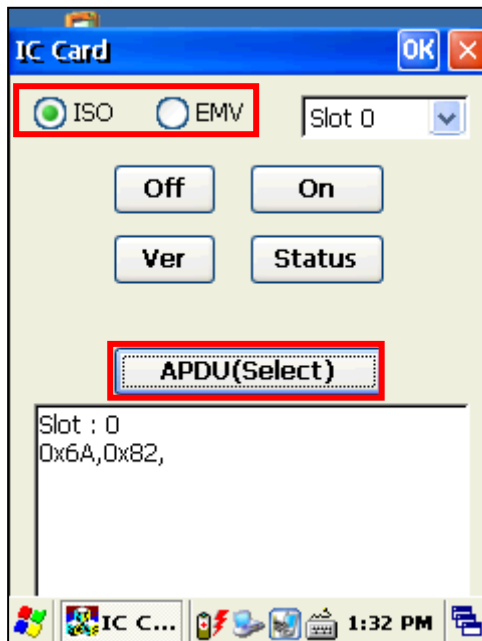
- 2) Physically insert IC card into device. Click on On button to enable IC card reader.



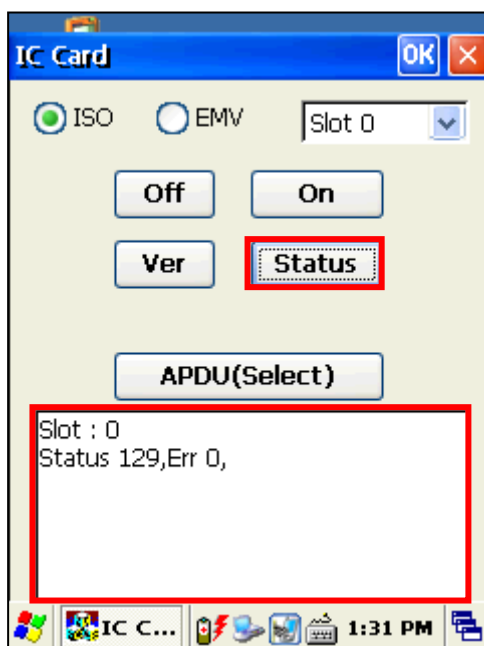
- 3) If an IC card is not in device, or is not a proper IC card, read will fail (left). If IC card is detected correctly, card information will be shown (right).



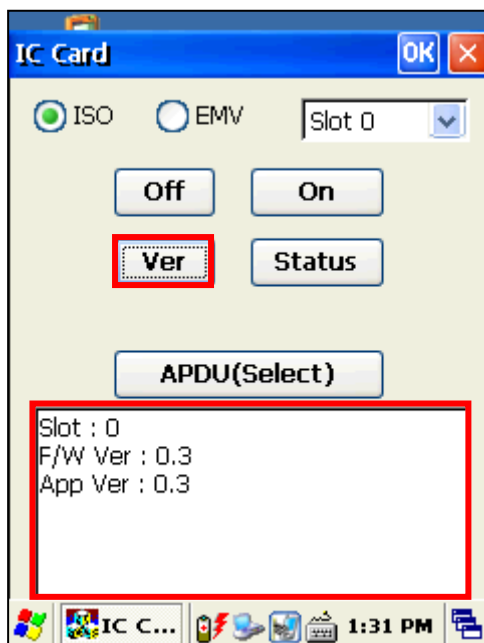
- 4) APDU(Select) will show applied protocol control information and user data information. You can choose ISO / EMV for card standard.



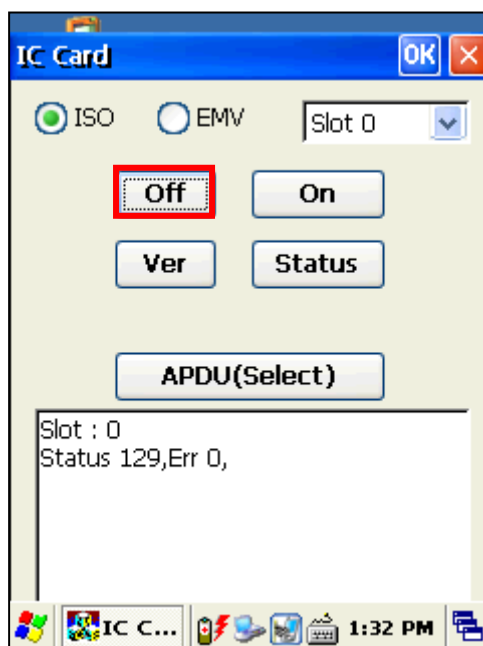
- 5) Click on Status button to display current status.



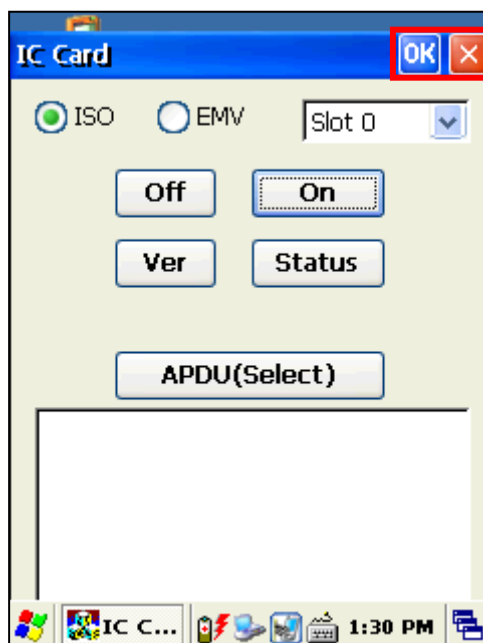
- 6) To obtain some version and firmware information on the IC card reader, click on the Ver button.



- 7) To turn off the IC card module, click on the Off button.



- 8) To close utility, click on the OK button or X button on the top right side of the window.



GSM/GPRS

Insert SIM card

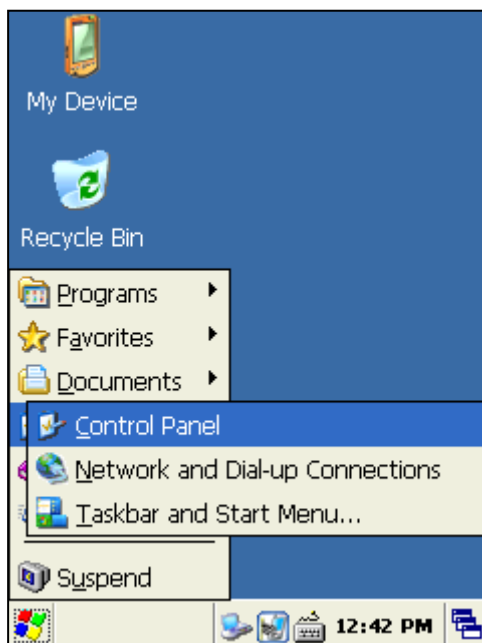
- 1) Unlock and remove battery from the PDA and insert SIM card into device. Push SIM card firmly into the slot with IC chip facing down.



- 2) Put battery back, and lock battery.

Turn GSM/GPRS on/off

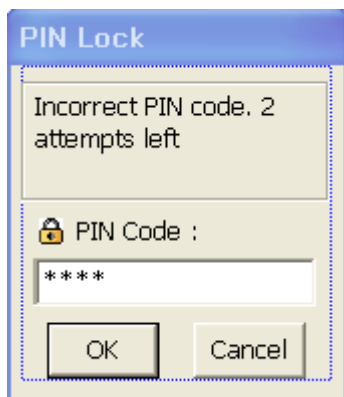
- 1) Start > Settings > Control Panel. Then double-click on *GSM/GPRS Power* icon.



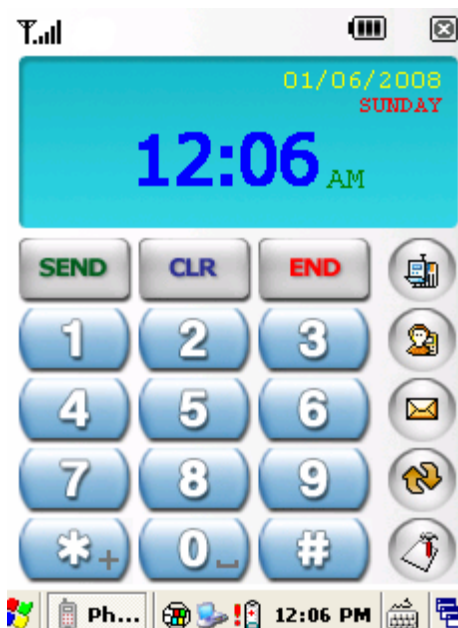
- 2) Select *Modem On* to turn GSM/GPRS on, or *Modem Off* to turn GSM/GPRS off.

Using GSM functionality

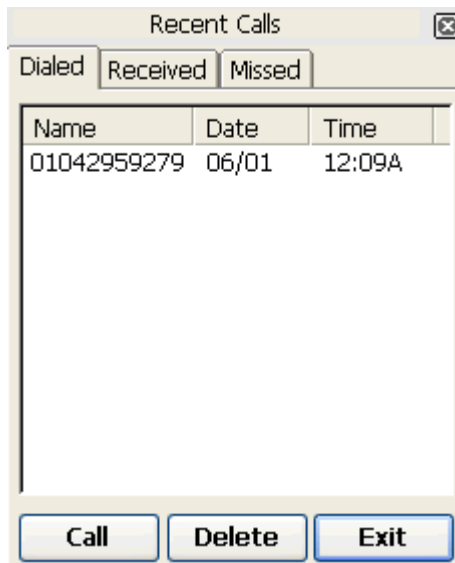
- 1) Press the green phone button on the keypad.
- 2) Enter the four digit Pin code for your SIM card. Please note, you only have three attempts to enter PIN code. If you fail all three attempts, you will need to enter the ten digit PUK number instead. You will have ten attempts to enter correct PUK number, if you fail the SIM card will be locked and you will need to contact your phone provider to unlock it.



- 3) Once PIN code is entered correctly, you will see the interface below. You can dial using the numbers on screen or using the physical keypad.
Note: Long press of "0" button will become space. Long press of "*" button will become "+".




- 4) To view recent call list, click and hold

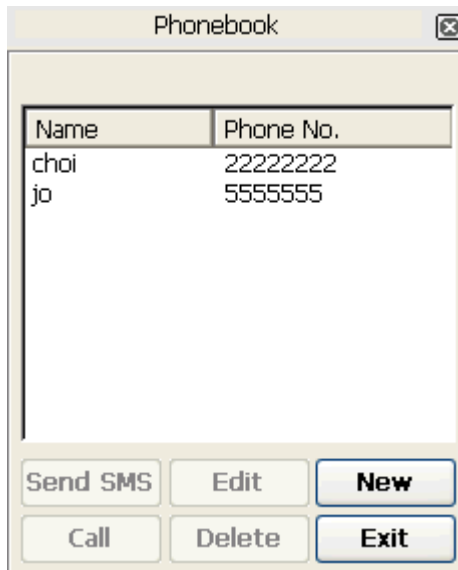


- 5) You can view Dialed, Received, or Missed calls by clicking on the different tabs on top. You can also Call or Delete numbers in the list by selecting the number and clicking on Call or Delete buttons on the bottom. Click on Exit to return to main phone interface.

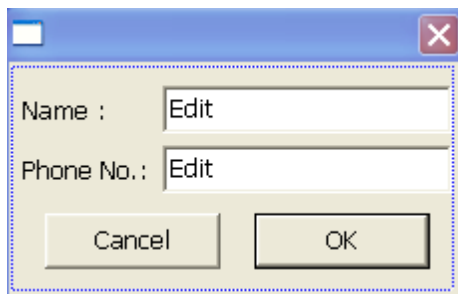
- 6) You can also click and hold **SEND** button to see only the Dialed list.




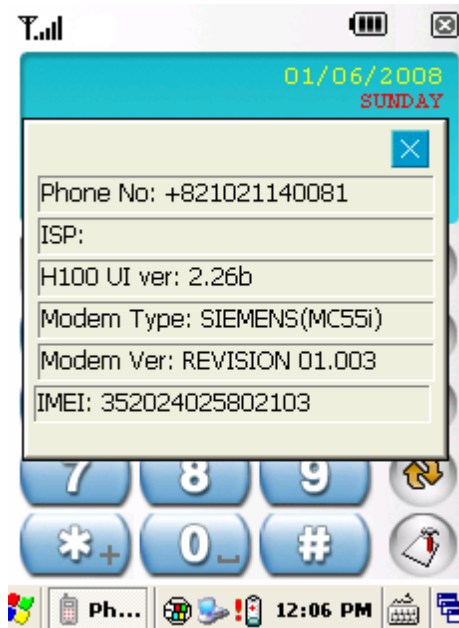
- 7) Open the Phone Book by clicking  button.



- 8) You can Edit, Call, Delete, or Send SMS to a contact after selecting the contact in the list.
- 9) To add a contact, click on the New button. Fill in the information in the window that appears and click OK. You can save as many contacts as allowed by your SIM card.




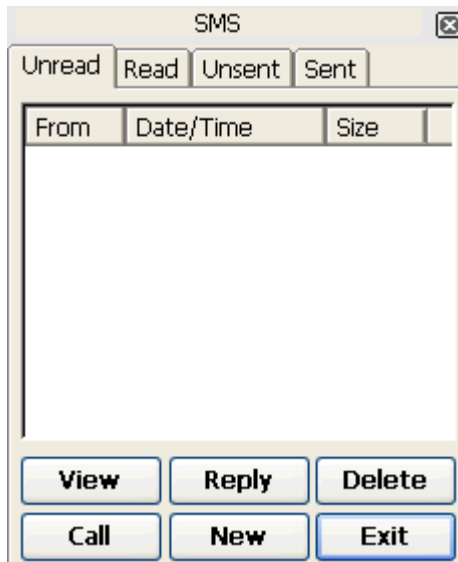
10) To obtain some detailed information, click on  button.



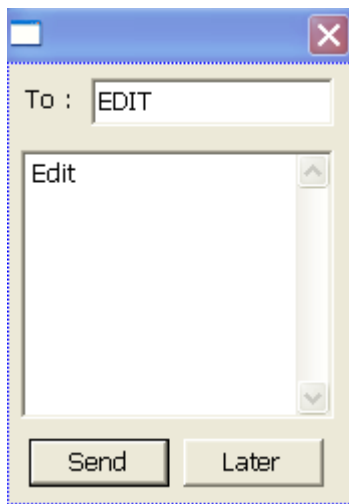
Sending SMS

- 1) Press the green phone button on the keypad.

- 2) Click on  button. The SMS manager will appear as below. You can view Unread, Read, Unsent, and Sent message by clicking through the different tabs on top.




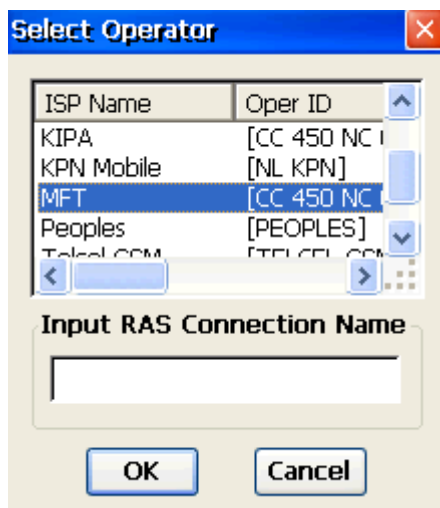
- 3) Click on New button to compose a message. Enter your SMS message and click Send.



Using GPRS functionality

- 1) Press the green phone button on the keypad.

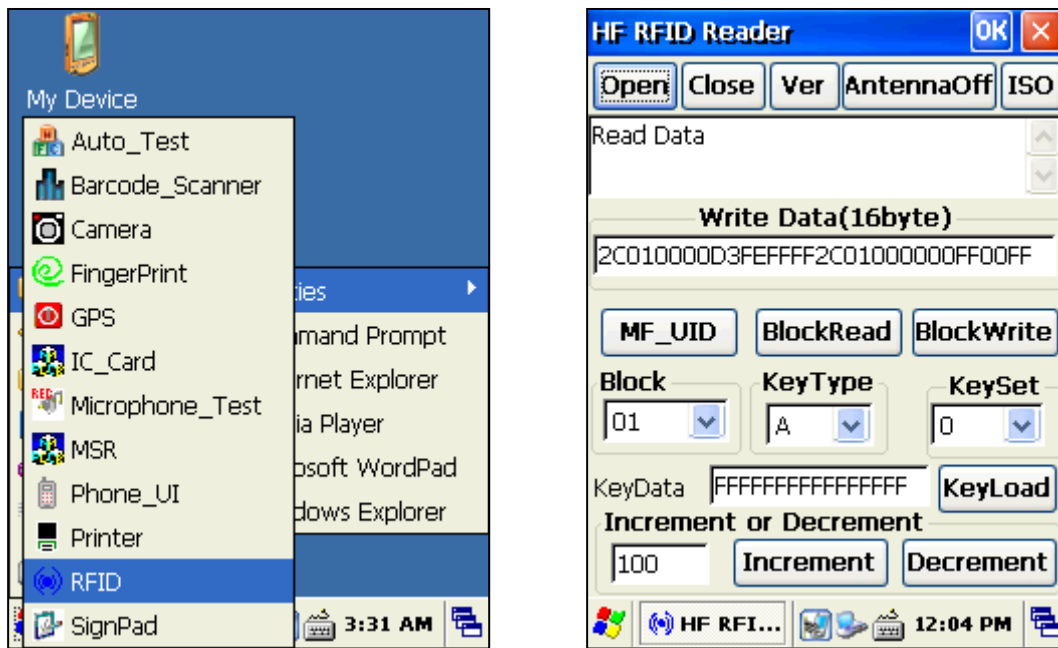
- 2) Click on GPRS  button. In the list that appears, select your SIM card operator and click OK. A status window will appear showing connection status (right).



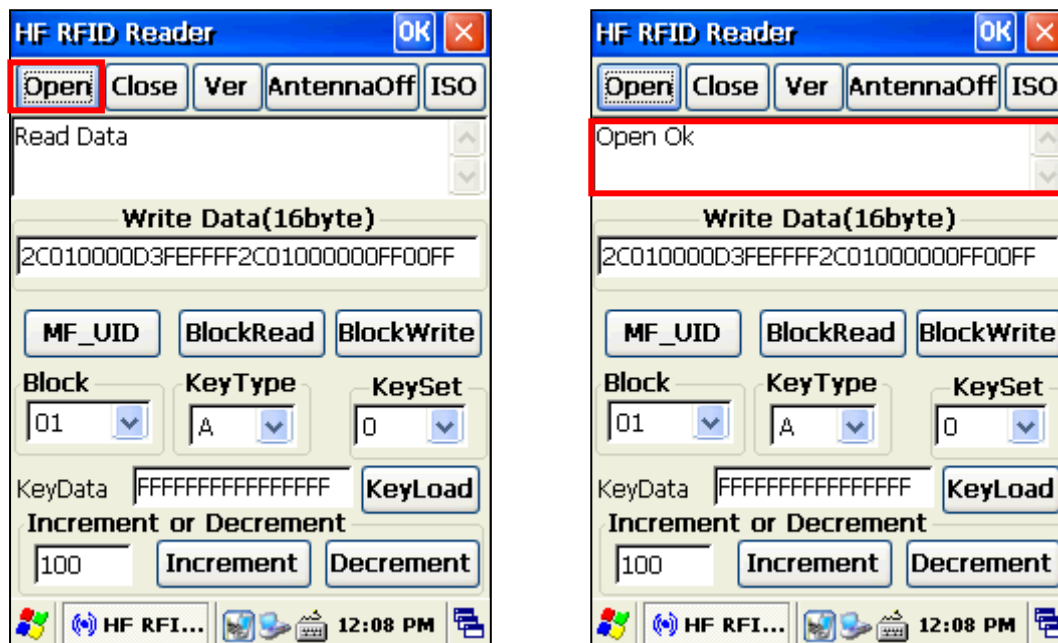
RFID

Turn RFID on/off

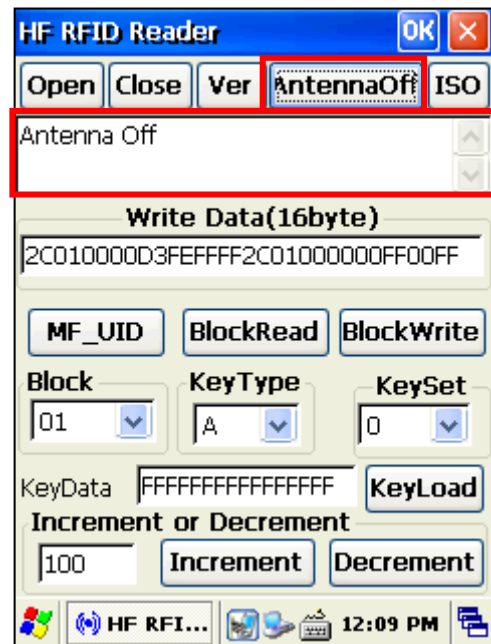
- 1) Start > Programs > Utilities > RFID. A test utility will appear (right).



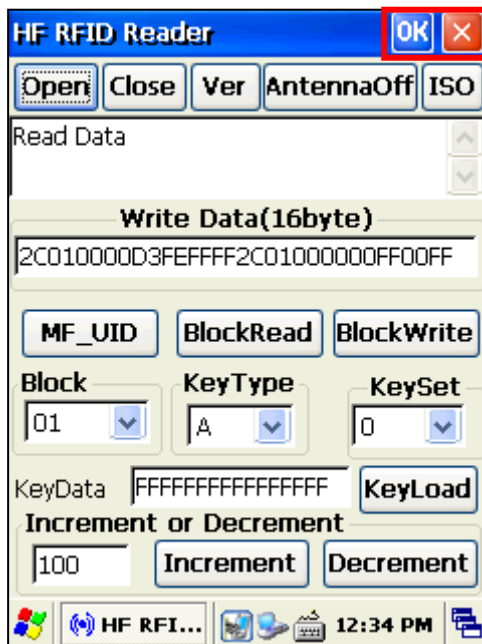
- 2) Click on Open button to enable RFID. The status area (right) shows current status. Please note that Bluetooth needs to be disabled for RFID to activate, because they share the same COM port.



- 3) To deactivate the RFID reader, press the Close button. To simply disable the antenna, click on *AntennaOff* button.

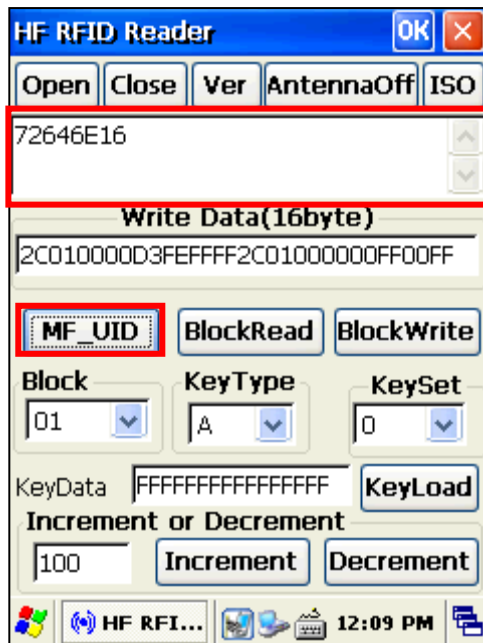


- 4) To close utility, click on the OK or X button on the top right side of the window.

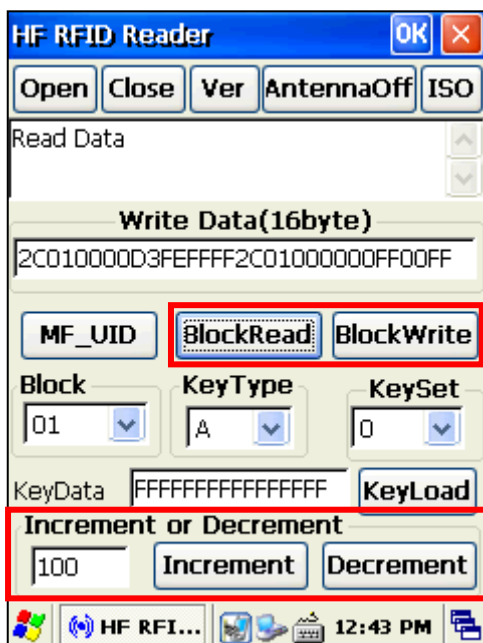


Reading & writing RFID card

- 1) Put a RFID tag on the top back side of device and press MF_UID button. Tag ID will be displayed in status area.



- 2) Press *BlockRead* button to read and write block. You can increment and decrement block data by using the buttons at the bottom of the utility.

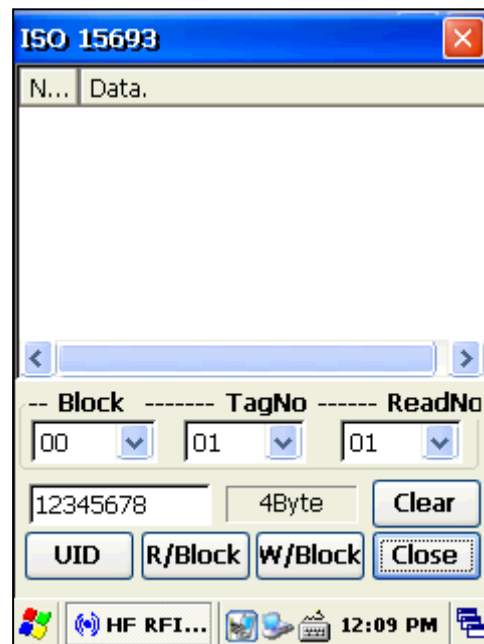
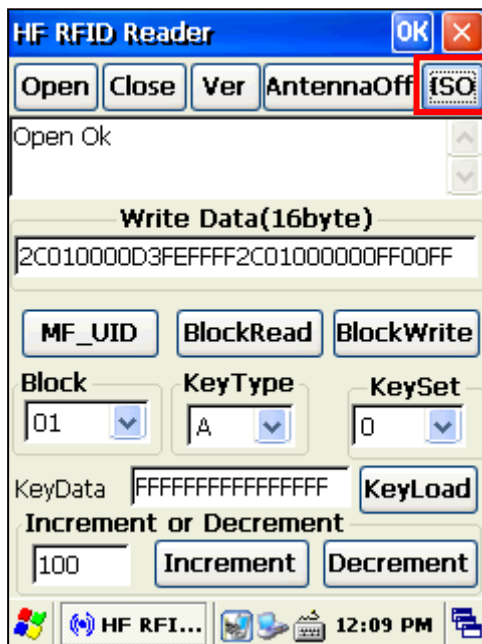


- Press Ver button to display Firmware version of the RFID module.



Reading & writing ISO 15693 RFID card

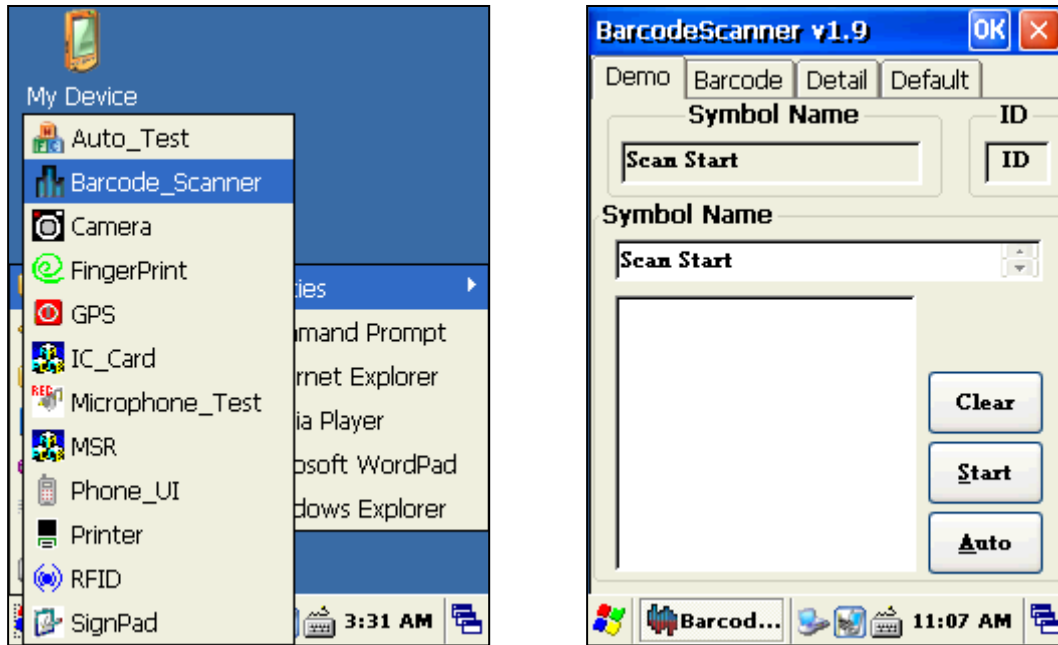
- Click on the ISO button to open the ISO 15693 tag window. You can read ISO 15693 tag ID, and read and write block data.



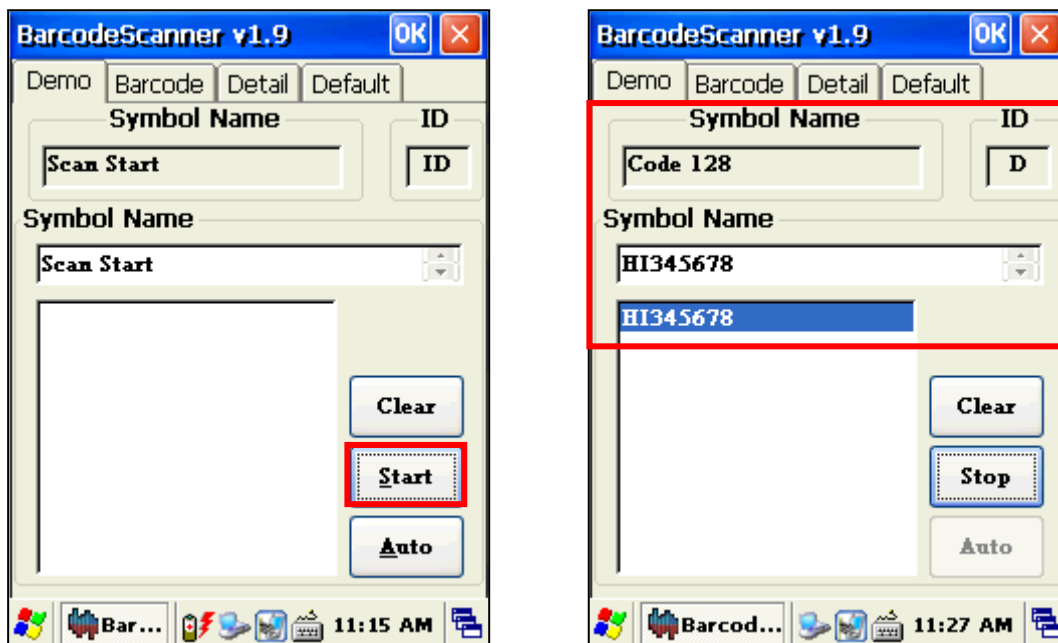
Barcode scanner

Using the Barcode Scanner

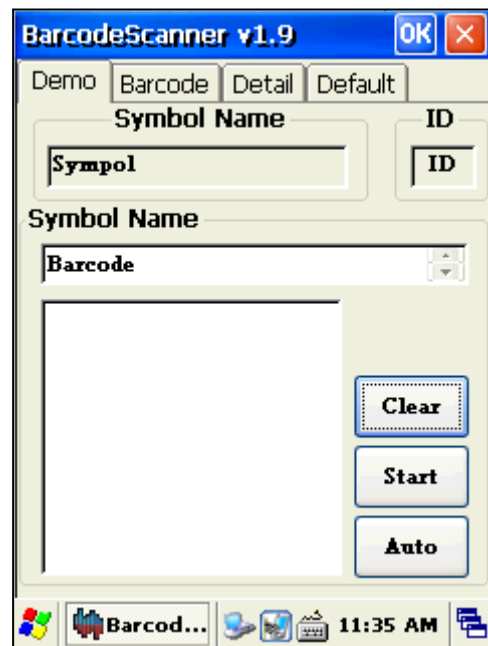
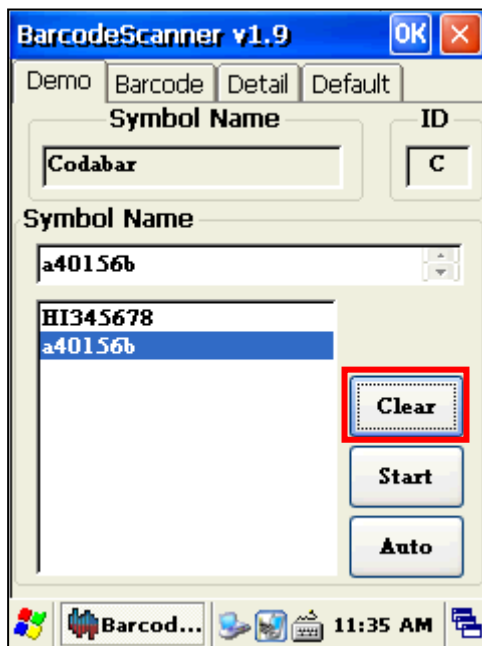
- 1) Start > Programs > Utilities > Barcode_Scanner. A test utility will appear (right).



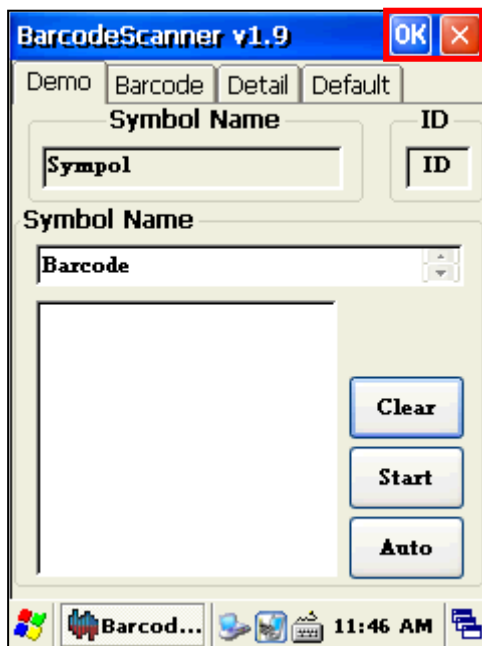
- 2) Click on the Start button (left) – the laser will activate. Scan a barcode. If read was successful, you should hear a beep, and data will be displayed (right). The barcode type is shown as well as the barcode data.



- 3) To clear the data in the list, click on the Clear button.

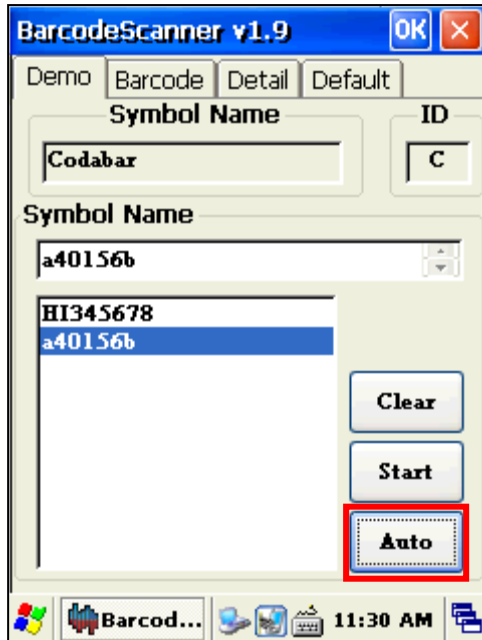


- 4) To close utility, click on the OK button or X button on the top right side of the window.

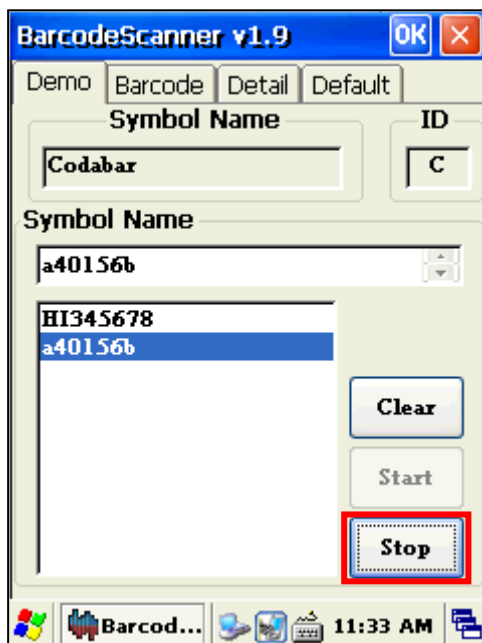


Continuous scanning mode

- 1) To initiate continuous scanning, click on the Auto button. In this mode, the laser will be on/off continuously, to read barcodes one after another.

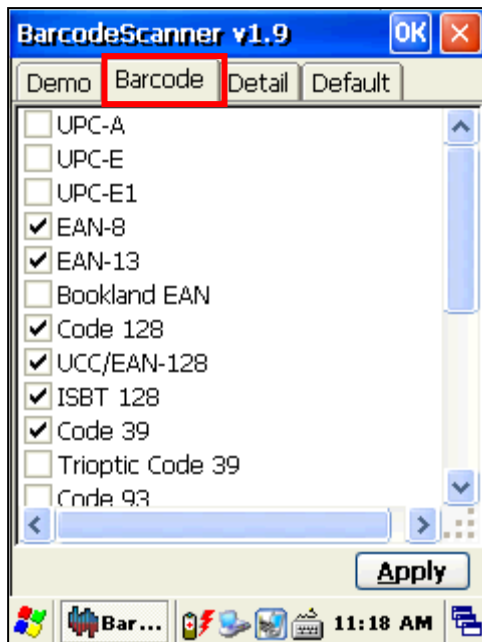


- 2) Press the Stop button to stop scanning.

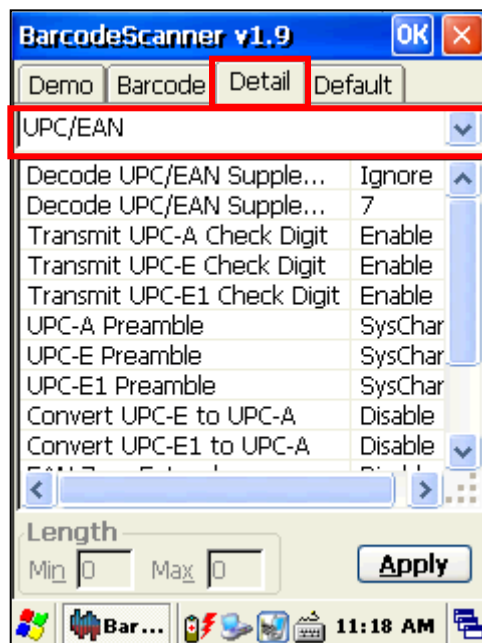


Barcode settings

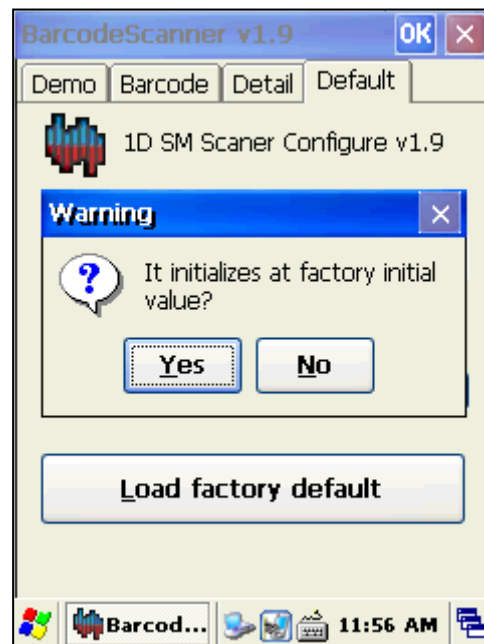
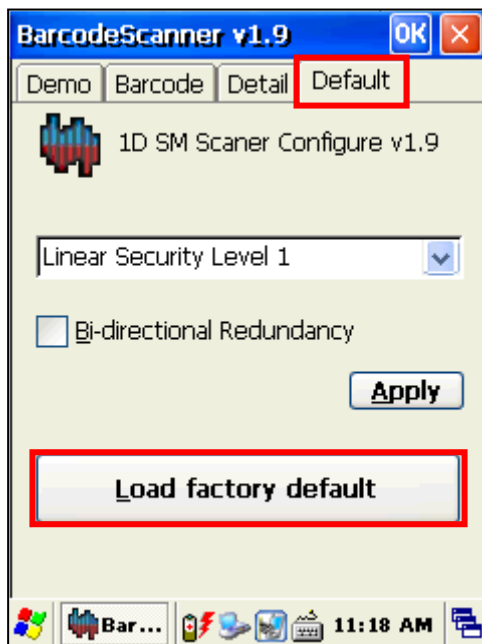
- 1) Click on the Barcode tab. Select which barcode types you want the scanner to decode by clicking on the checkbox next to each type. Click on the Apply button to apply settings.



- 2) Click on the Detail tab. Here, you can change settings for each barcode type. Select the barcode type by clicking on the pull-down list. Click on the Apply button to apply settings.



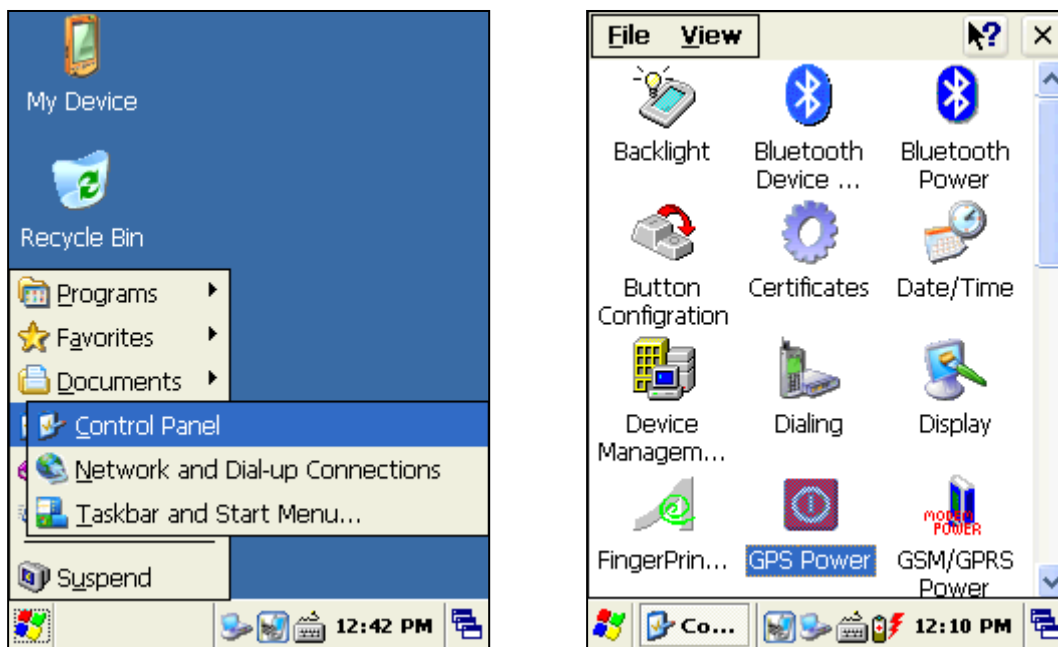
- 3) Click on the Default tab. Here you can reset the scanner settings to factory default settings by clicking on *Load factory default* (left). A pop-up window will appear asking for confirmation (right).



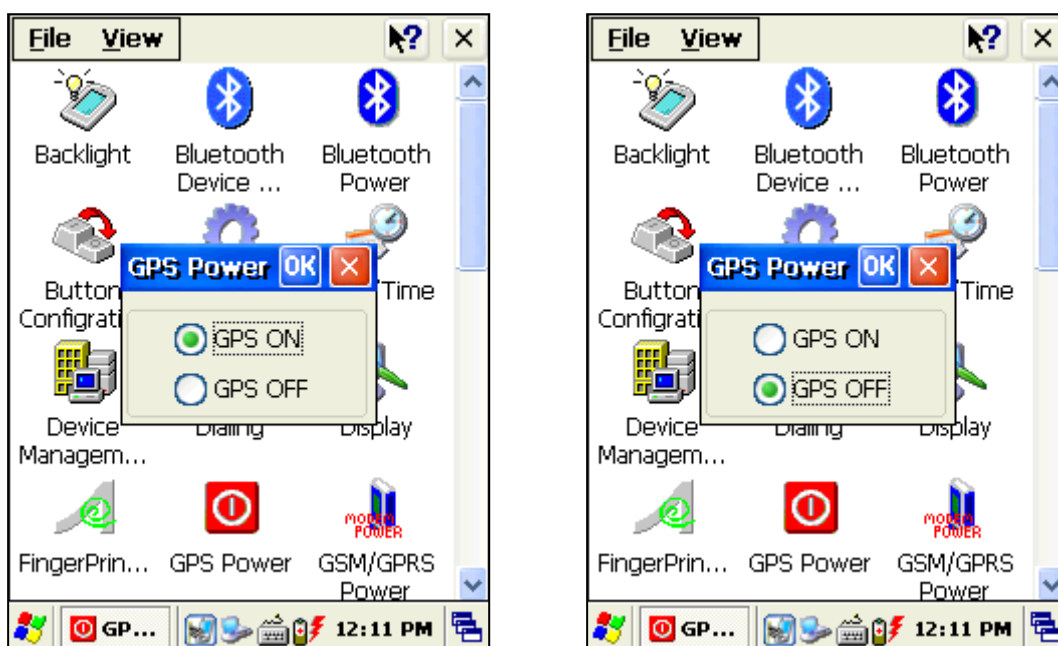
GPS

Turn GPS on/off

- 1) Start > Settings > Control Panel. Then double-click on *GPS Power* icon.

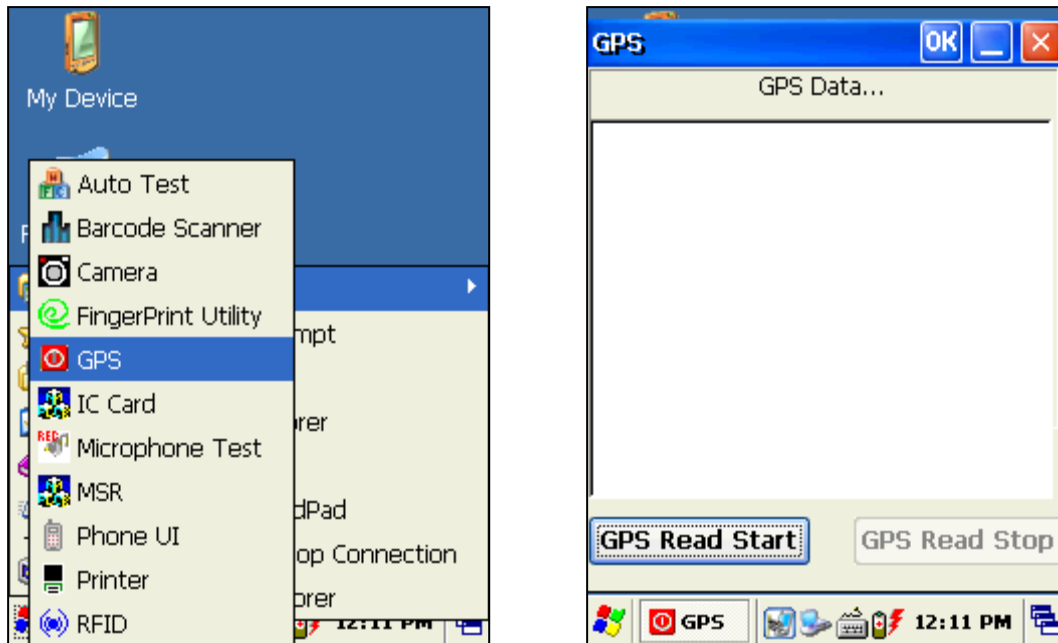


- 2) Select *GPS On* (right pic) to turn GPS on, or *GPS Off* (left pic) to turn off GPS. Click on the *OK* button in the top right corner to apply setting.

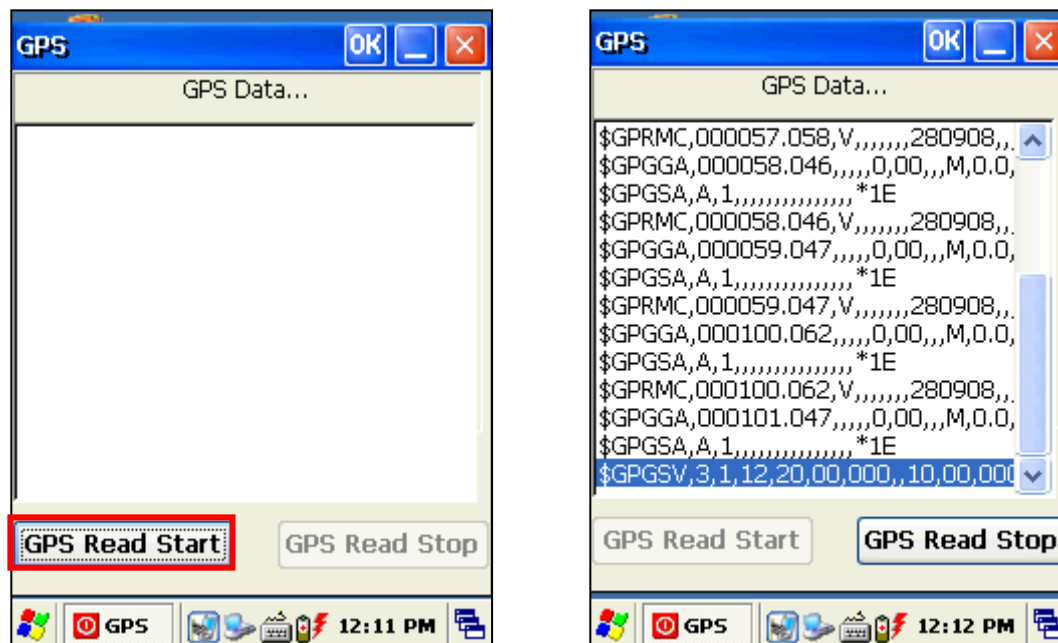


View GPS data

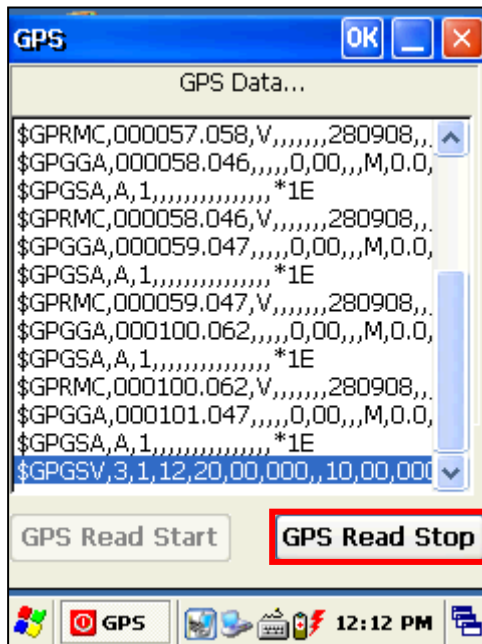
- 1) If you use your own GPS software, you only need to enable GPS in the Control Panel, and set your software to receive data on COM6, baud rate 9600.
- 2) Start > Programs > Utilities > GPS. A test utility will appear (right).



- 3) To view GPS data using the test utility, click *GPS Read Start* button. GPS data starts appearing very quickly.



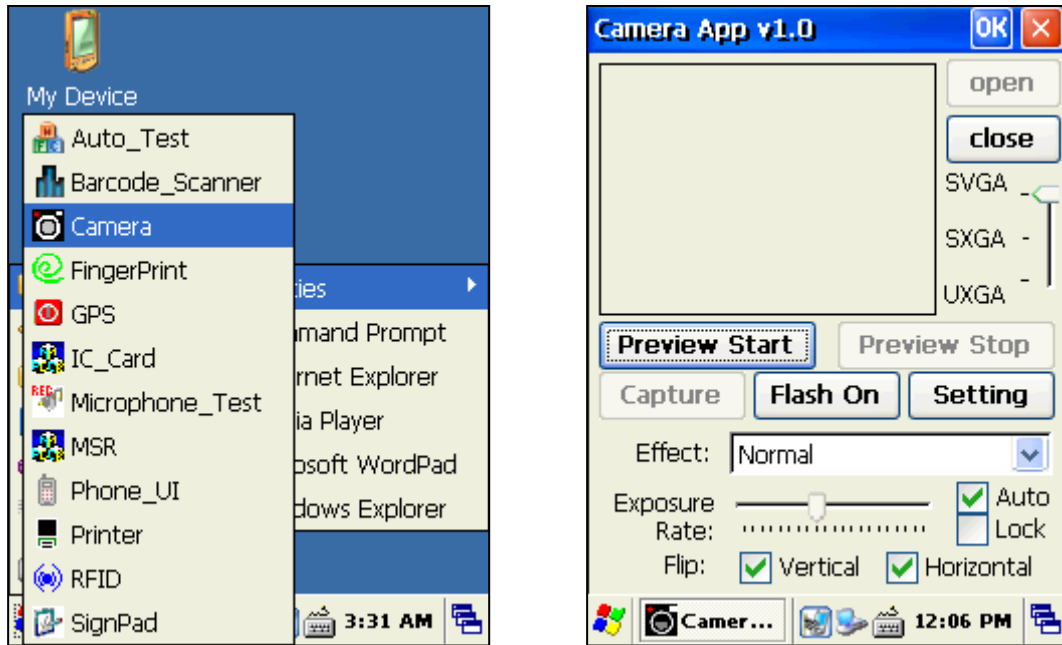
- 4) Click on *GPS Read Stop* button to stop displaying the GPS data.



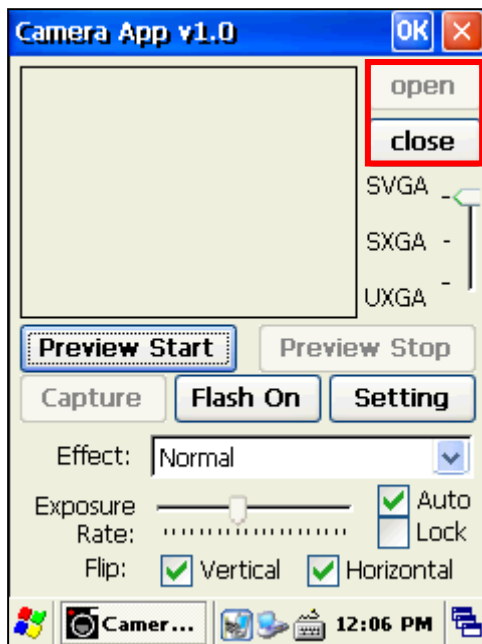
Camera

Turn Camera on/off

- 1) Start > Programs > Utilities > Camera. A test utility will appear (right).

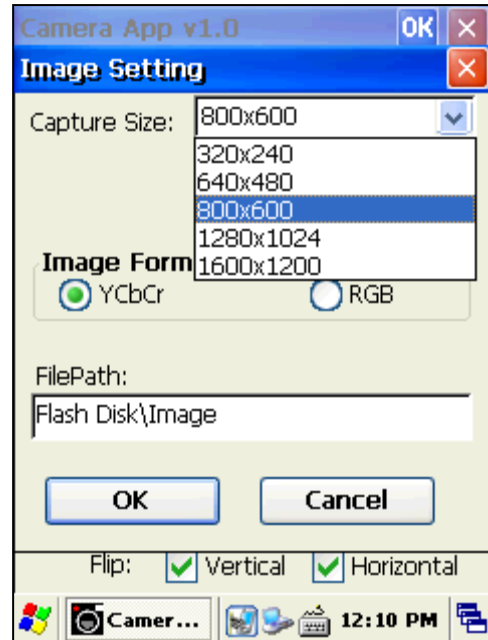
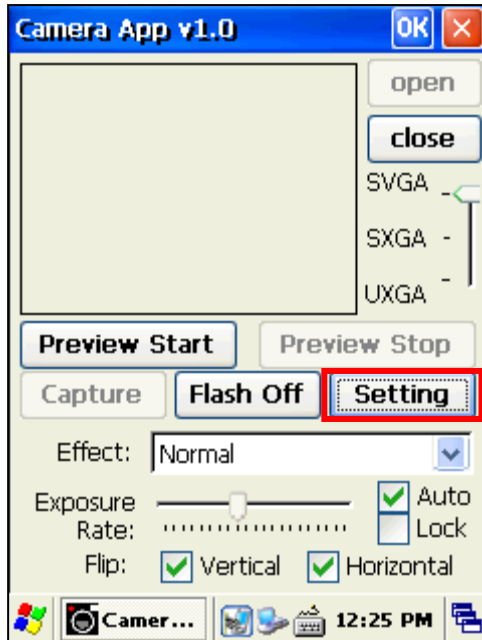


- 2) Click on *Open* button to enable camera. Click on *Close* button to disable camera.

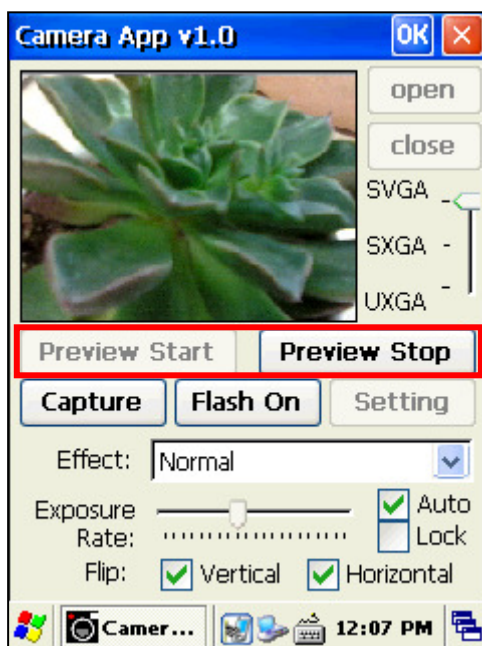


Using Camera utility

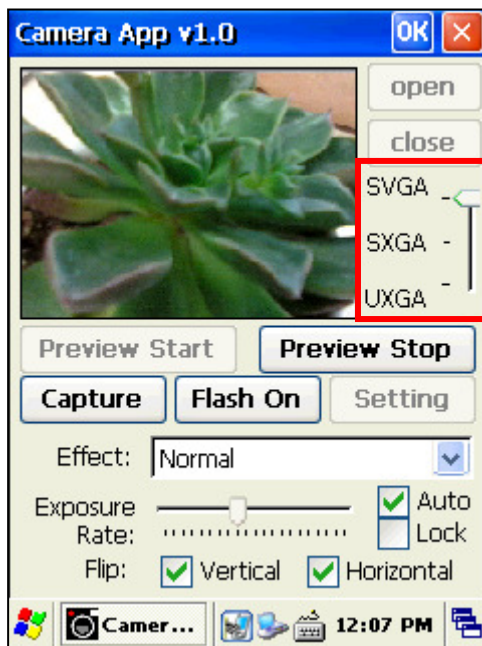
- 1) Click on the Setting button (left). Select screenshot capture resolution, image format, and save location. Click on the OK button to save settings (right).



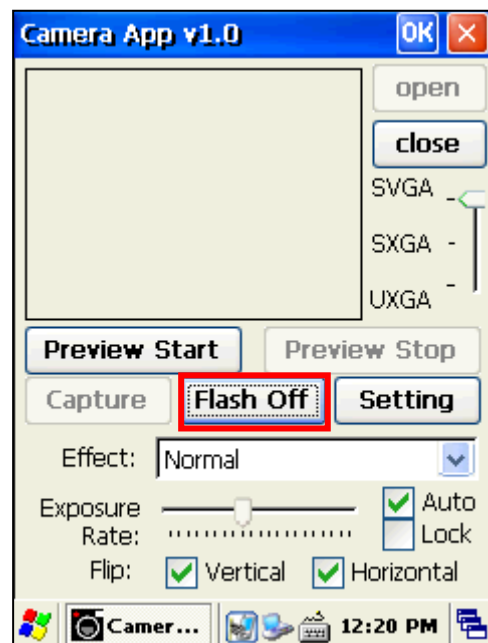
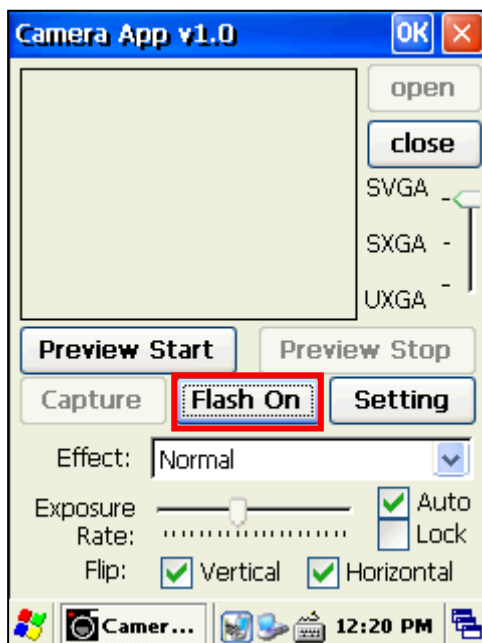
- 2) Click on the *Preview Start* button to activate camera. Click on the *Preview Stop* button to stop the camera.



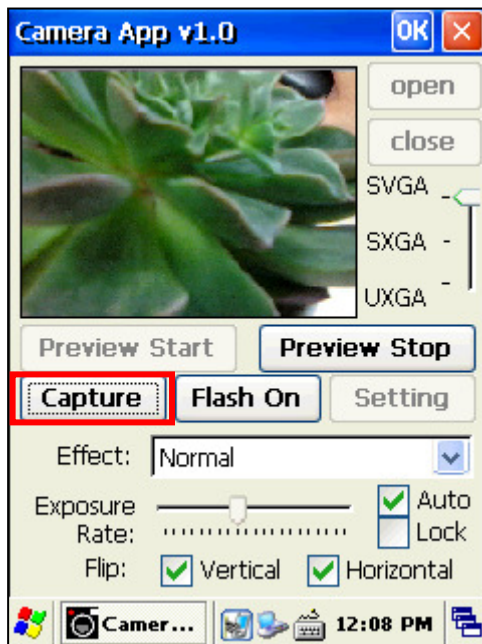
- 3) Use the slider bar to adjust display resolution (zoom in and zoom out).



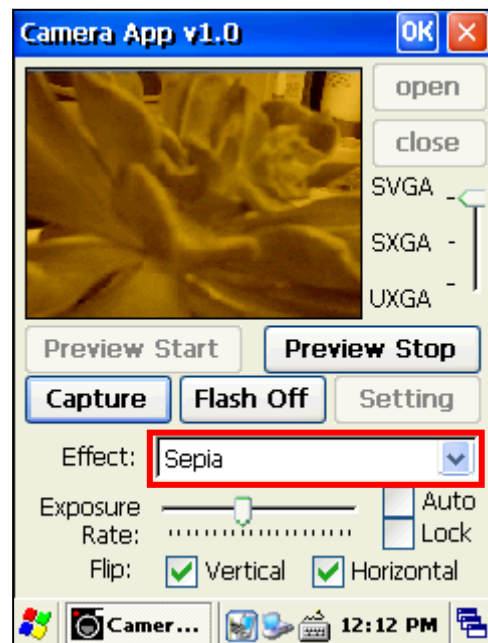
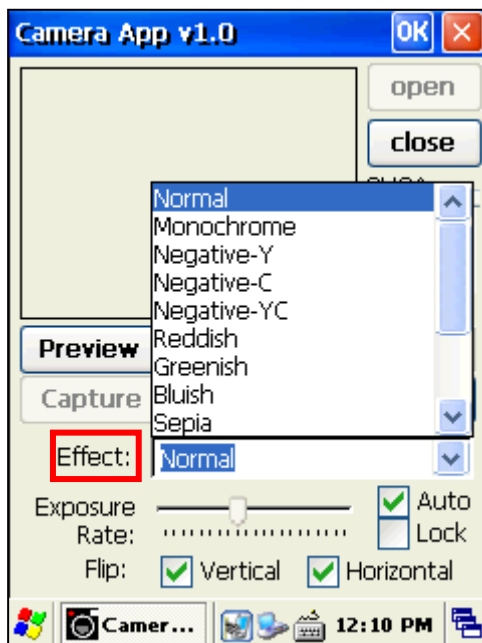
- 4) Click on the *Flash On* button to turn on the LED flash (left). Click on the *Flash Off* button to turn off the LED flash (right).



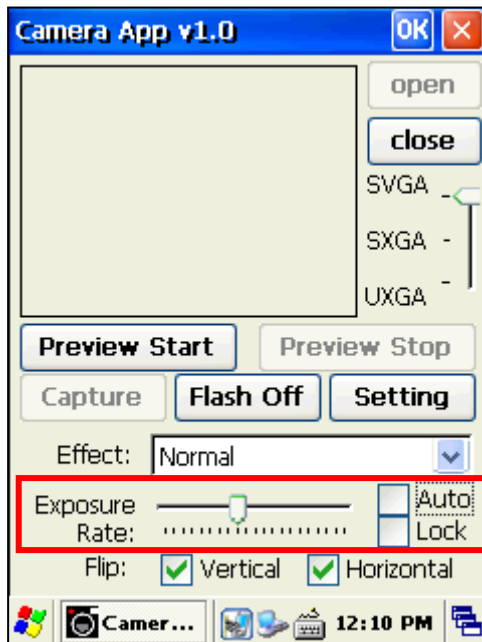
- 5) To make a screenshot, click on *Capture* button. The image file resolution, format, and save directory are defined in Settings.



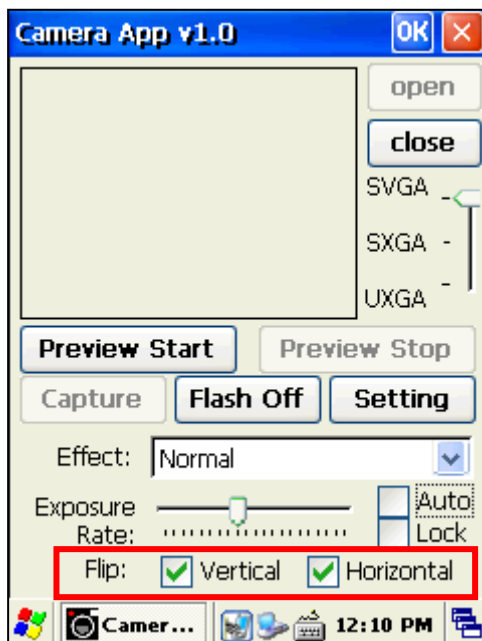
- 6) You can select an image filter by selecting from the Effect pull-down list. Preview of the effect is displayed immediately (example: Sepia effect is selected in right image below).



- 7) To adjust the image exposure rate manually, uncheck the *Auto* checkbox. Then use the *Exposure Rate* slide bar to select your exposure. To avoid accidental change in exposure, you can check the *Lock* checkbox to lock current setting.



- 8) To flip the image vertically, check the *Vertical* checkbox. To flip the image horizontally, check the *Horizontal* checkbox.

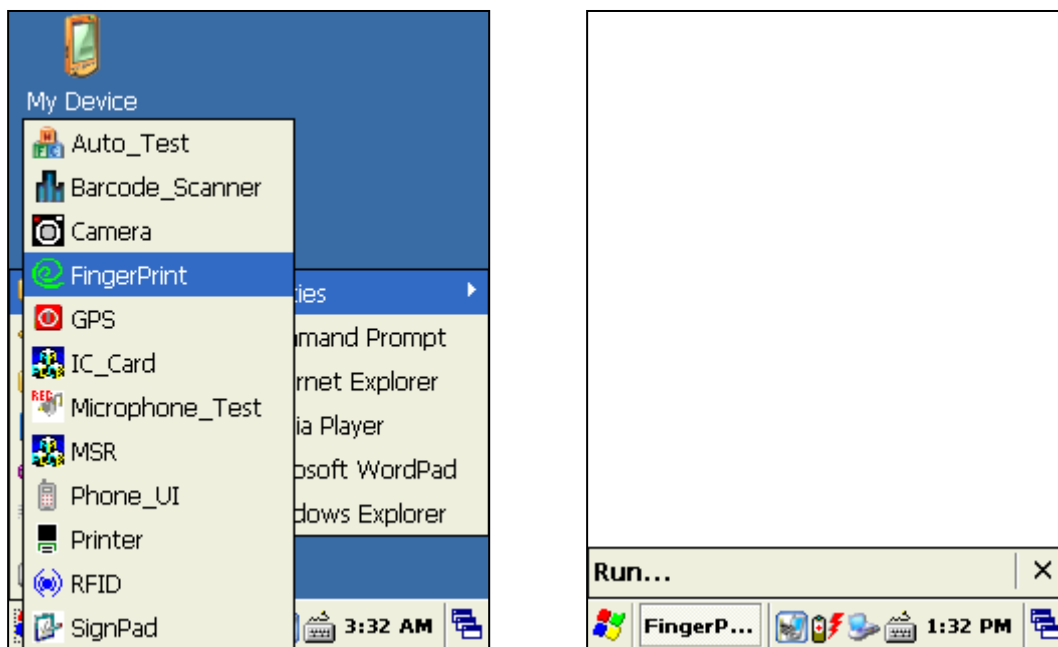


- 9) Click on the *Close* button to deactivate camera module. Then click on the OK button or X button to quit test utility.

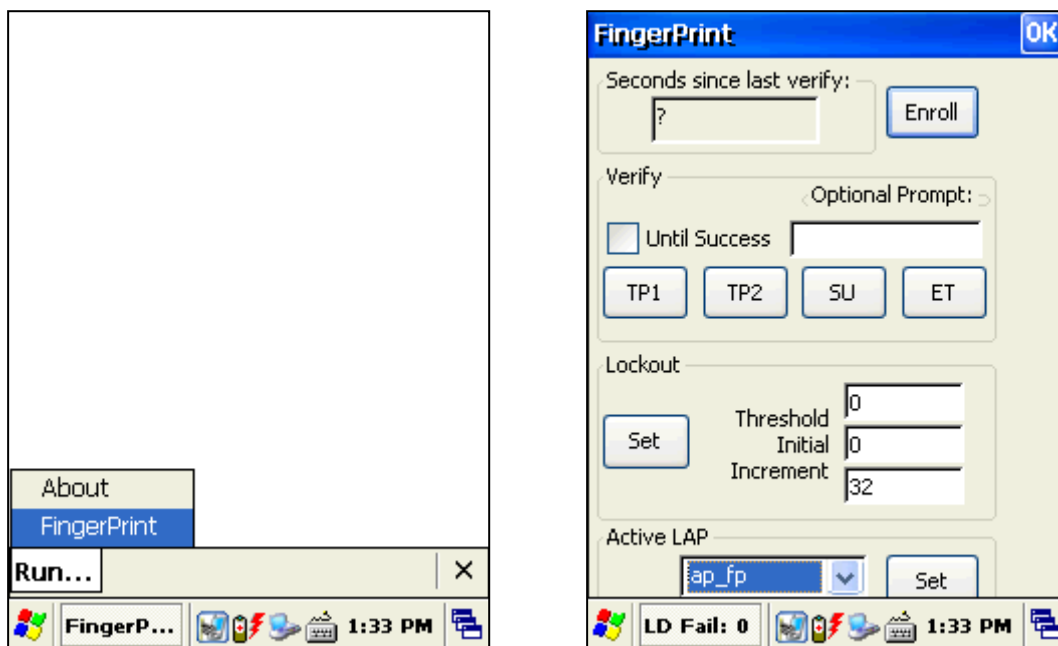
Fingerprint scanner

Enroll Fingerprint

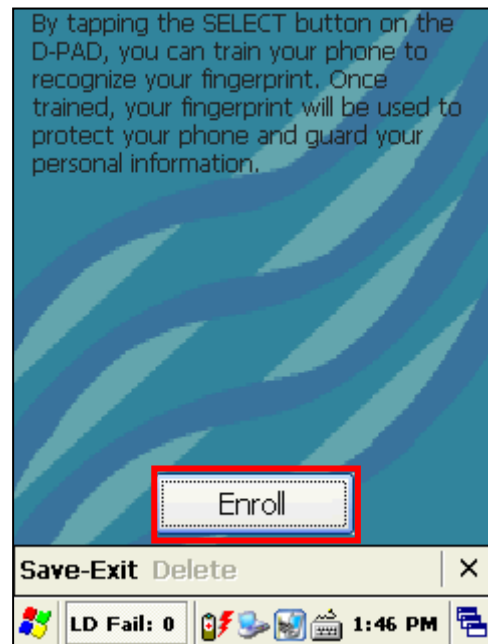
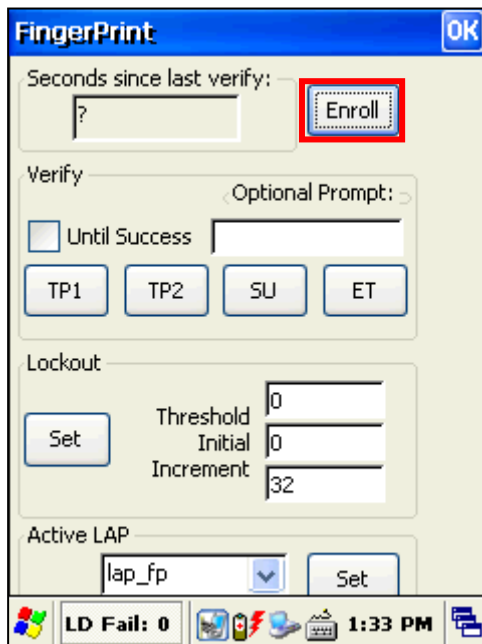
- 1) Start > Programs > Utilities > Fingerprint_Utility. A test utility will appear (right).



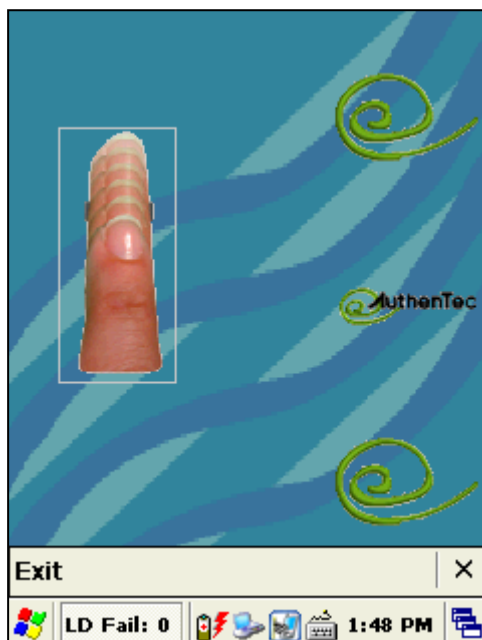
- 2) Click on Run... and select *FingerPrint* (left). The main utility page appears (right).



- 3) Click on the *Enroll* button to start fingerprint registration process (left). You will see a new window. Click on the *Enroll* button on this screen (right).



- 4) Swipe the finger you want to register on the fingerprint scanner (on back of device). To swipe correctly, please swipe finger downwards. A good swipe will display your fingerprint with a message on top of screen (right). Four good swipes are required.



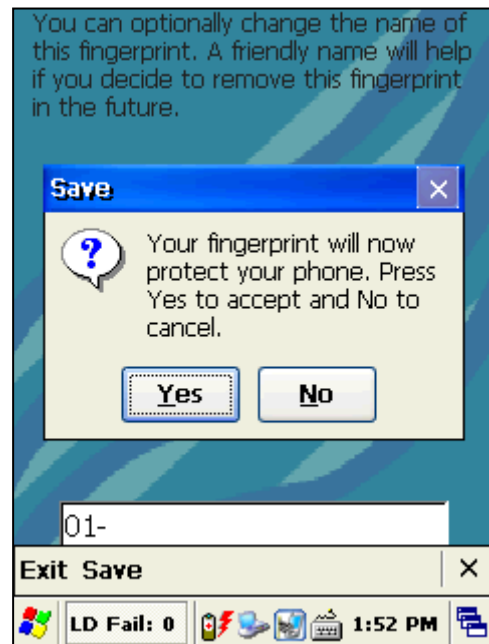
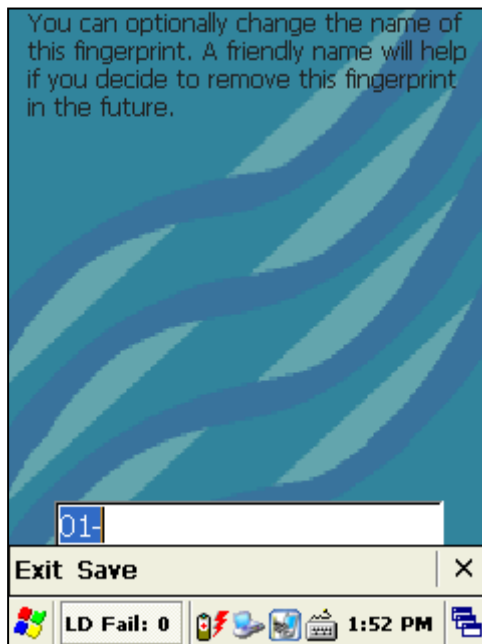
- 5) If swipe is bad, display will show messages as below.



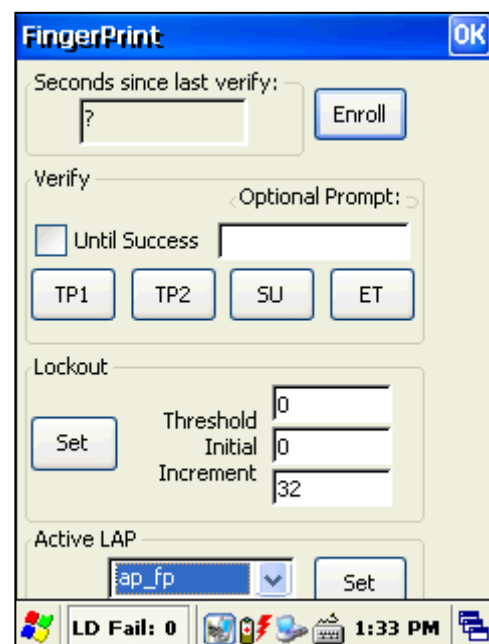
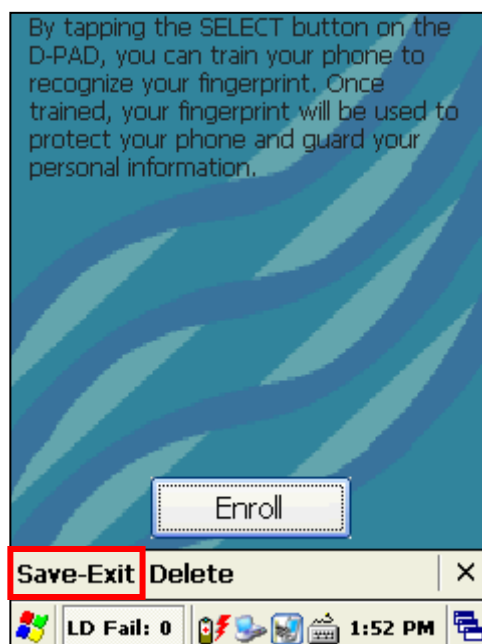
- 6) Four good swipes are required. Enrollment is finished when you see pop-up window with Success message (right). Click on the OK button in the pop-up window.



- 7) Enter a name to save the fingerprint. Click on the *Save* button to save. Pop-up window appears for confirmation, click on *Yes* button to apply.

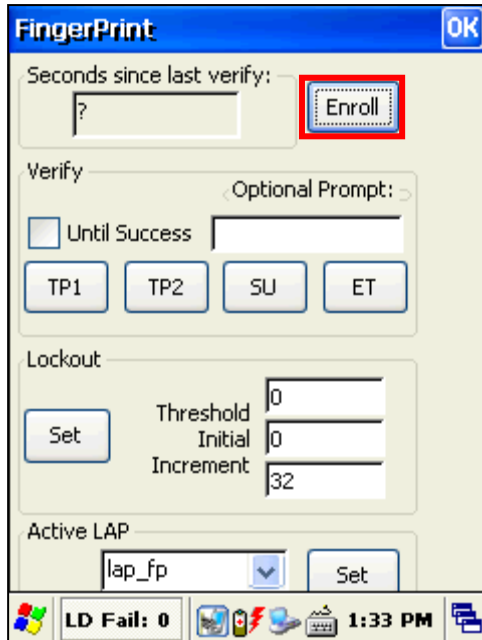


- 8) NOTE: Once you save fingerprint, you will need it each time you start the device. To complete the fingerprint enrollment process, click on the *Save-Exit* button (left). You will be back to the first interface (right). If you wish to enroll more fingerprints before *Save-Exit*, click on *Enroll* button instead. Otherwise, you will need to swipe the saved fingerprint next time, before you can enroll another fingerprint or delete a fingerprint.

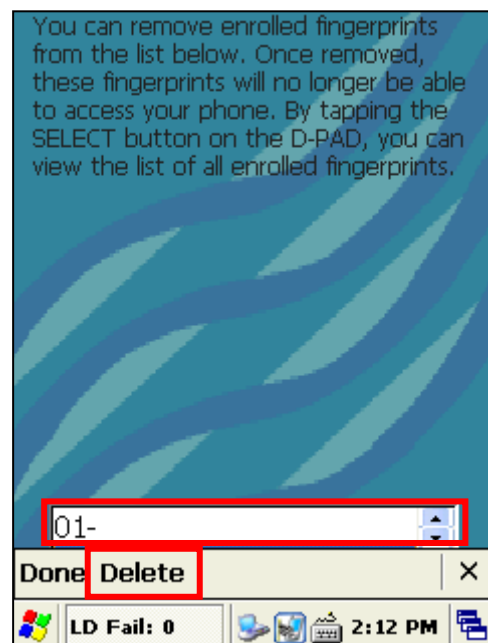
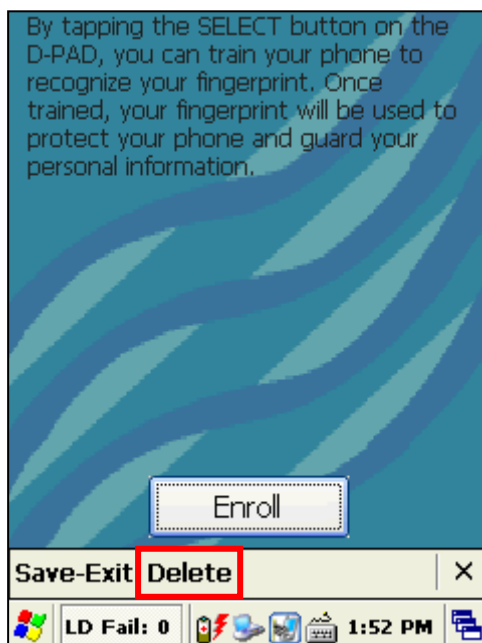


Delete Fingerprint

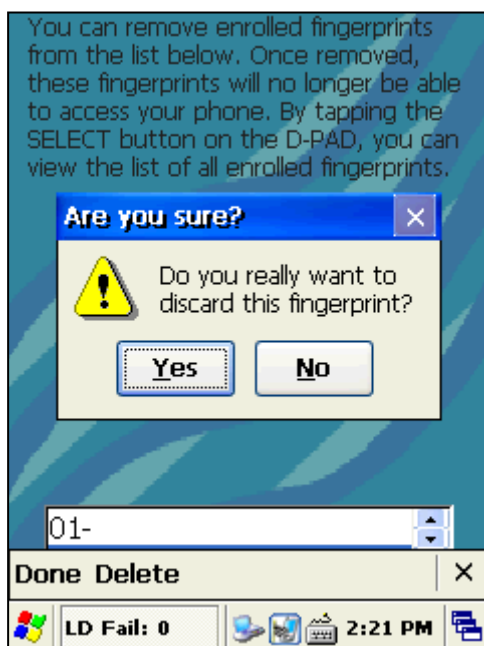
- 1) Click on the *Enroll* button (left). Since a fingerprint is already enrolled, you need to swipe it before you can enroll another fingerprint, or delete existing fingerprint.



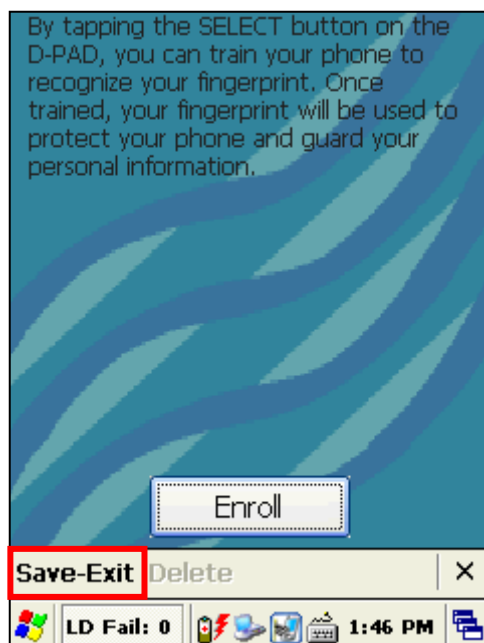
- 2) Click on the *Delete* button (left). Select which fingerprint you want to delete, then click on the *Delete* button (right).



- 3) A pop-up window appears. Click the Yes button to confirm fingerprint delete.

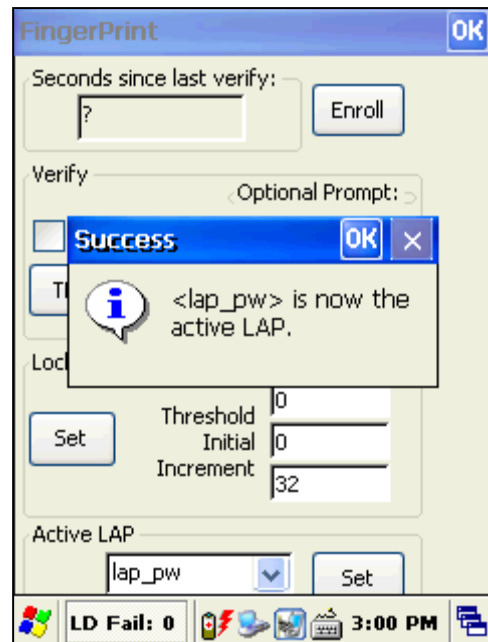
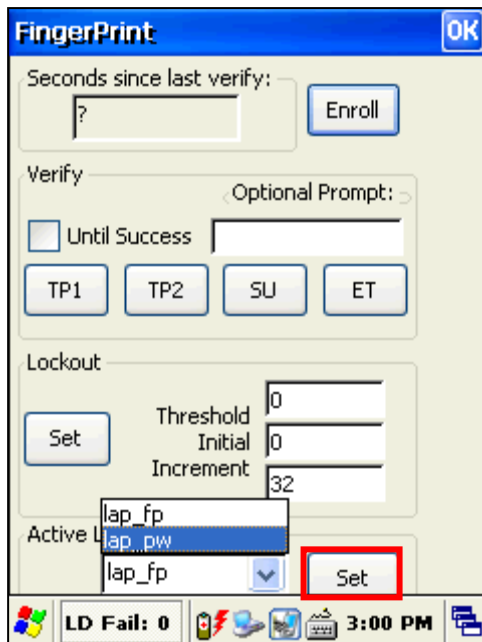


- 4) Click on the Save-Exit button to finish.

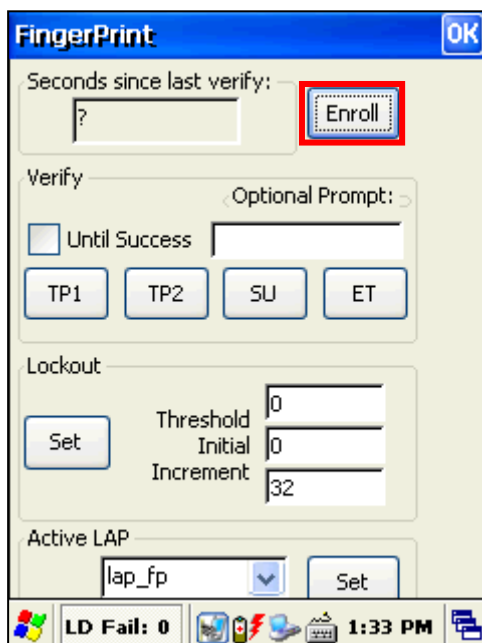


Register Password

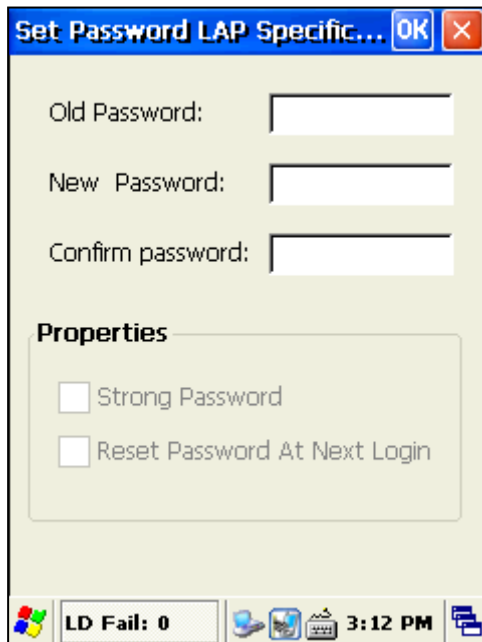
- 1) You can choose to password protect device instead of using fingerprint. At the bottom of window, under *Active LAP*, select *lap_pw*. Click on the *Set* button. A pop-up window will confirm setting (right).



- 2) Click on *Enroll* button to register password.



- 3) If you have not set a password yet, leave *Old Password* field blank. Enter your password in *New Password* and *Confirm password* fields. To save, click on the *OK* button on top right of window, or press the Enter key on the physical keypad.

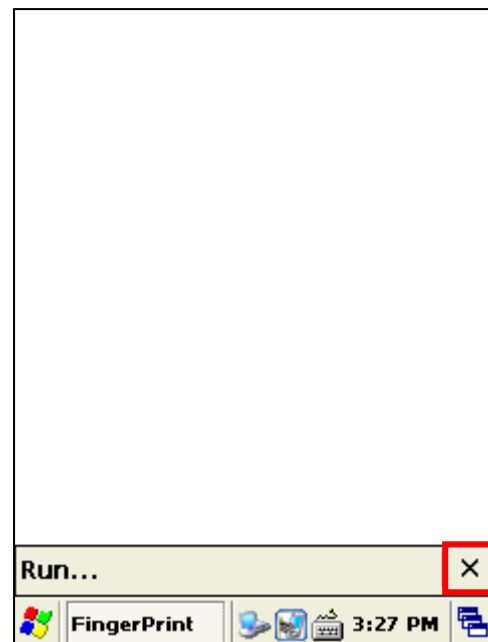
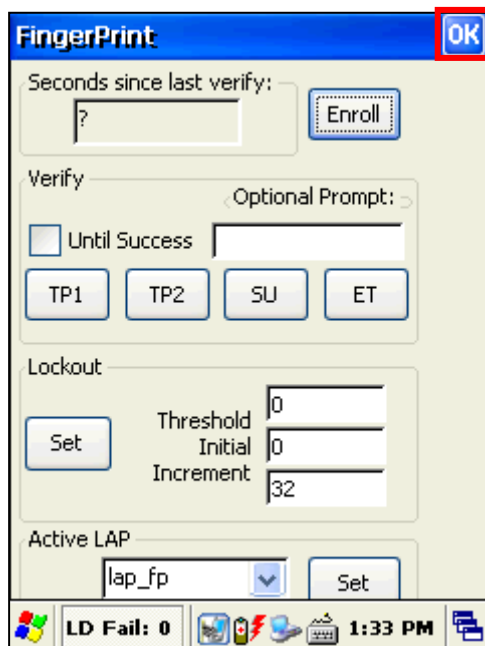


- 4) You can also set password protection in Start > Settings > Control Panel > Password.



- 5) To delete password, simply change password to blank.

- 6) To quit utility, click on the *OK* button on top right of screen (left). Then click on the X button (right).

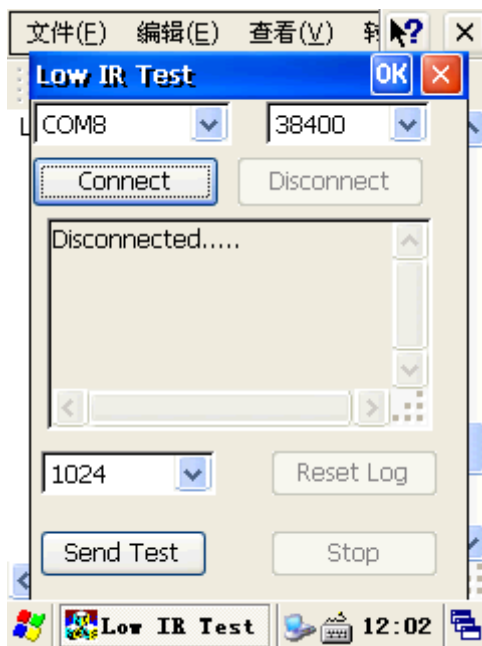


ACCESSORIES

Cradle

Testing COM port on cradle

- 1) Double-click on My Device to open Explorer window.
- 2) In the menu bar on top of the screen, select View> Options. A pop-up window appears.
- 3) Uncheck box "Hide protected operating system files (Recommended)"
- 4) Click on the OK button in the pop-up window.
- 5) The *Windows* folder should have appeared in the Explorer window. Double-click on it.
- 6) Find and run the program *Serialtest*
- 7) Select the COM port, the baud rate, the click on the *Connect* button. You can test simple operations such as Open/Read/Write.



Connect external scanner

- 1) Connect a scanner to the DSUB-9 connector on the cradle
- 2) In your own software, call function `BSDK_SetSelExtUart12PortActive` (the function is located in the header file of `PlatformDevSdkCmn.h`)
- 3) External scanner can be used now

Interface information of cradle

- DC jack
 - Connector for AC adaptor
 - Supplies cradle and device with power
- Spare battery charging slot
- USB-A connector
 - USB host
 - USB device (client) interface (for example USB memory)
- RS-232 DSUB-9 (male) connector

Pin#	Pin name	Description
2	RXD_2	Ext. uart ch-2, input to device, RS-232C level
3	TXD_2	Ext. uart ch-2, output of device, RS-232C level
5	GND	Ground terminal
9	5VDC	5Vdc 0.5A output of cradle, PowerSupply for external application

- 24-pin IO connector

Pin#	Pin name	Description
2	USBHP	USB-Host pin, data
3	USBHN	USB-Host pin, data
4	5VDC	5Vdc 0.5A output of CRADLE, PowerSupply for external application
6	USBH_PWR	USB-Host pin, power output from DOTH-100
10	USBCN	USB-Device (client) pin, data
12, 19	GND	Ground terminal
13	RXD_2	ext. uart ch-2, input to DOTH-100, RS-232C level
14	TXD_2	ext. uart ch-2, output of DOTH-100, RS-232C level
15	USBCP	USB-Device (client) pin, data
16	V_USB_PC	USB-Device (client) pin, power input from USB-HOST such as PC
17	RXD_3	ext. uart ch-3, input to DOTH-100, RS-232C level
18	TXD_3	ext. uart ch-3, output of DOTH-100, RS-232C level

UPGRADING THE OS

There are 2 ways to upgrade the OS. You can upgrade using a microSD card, or upgrade by connecting device to a PC via USB.

Please note, there are two types of OS image files. Do not install wrong OS as this may cause unpredictable behavior on device.

- TKxxxxxxxxxxxxxxxxF.DI For devices with fingerprint
- TKxxxxxxxxxxxxxxxx.DI For devices without fingerprint

Upgrade using microSD Card

Use a microSD card formatted to FAT32. For upgrading OS, only cards 4G or less can be used.

- 1) Extract the OS file, and copy file to the root directory of microSD card. Please copy correct OS image file depending on device hardware.
- 2) Insert microSD card into device.
- 3) Press and hold the Power button, and press the Reset pinhole button
- 4) Release the Power button only when you see the first screen with flowers
- 5) At the bottom of the screen, a message should appear: "Waiting for Downloading..."
- 6) Then "Reading Image In Card...". This step will take around two minutes.
- 7) Then "Writing OS Image...". This step will take around one minute.
- 8) Upgrade process is complete when you see message "Image Update Complete!"
- 9) Do a cold reset to reboot device (press Power and Reset at the same time)
- 10) Check new OS version number in Control Panel > System

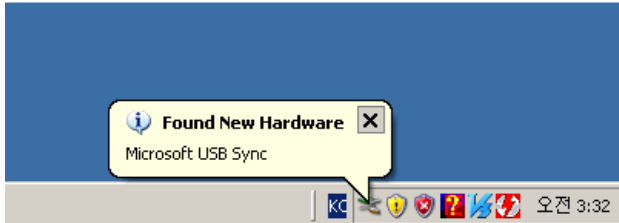
Upgrade by PC through USB cable

To upgrade device from your PC, you need to install a device driver first.

Install device driver onto your PC

- 1) Copy the USB Download Utility into a folder on your PC. The files are:
dot180bulkusb.inf / dot170bulkusb.sys / USBDownload.exe
- 2) Plug device to computer using the USB cable provided
- 3) Press and hold the Power button, and press the Reset pinhole button

- 4) Release the Power button only when you see the first screen with flowers
- 5) At the bottom of the screen, a message should appear: "Waiting for Downloading..."
- 6) On your computer, an alert will appear - *Found New Hardware*



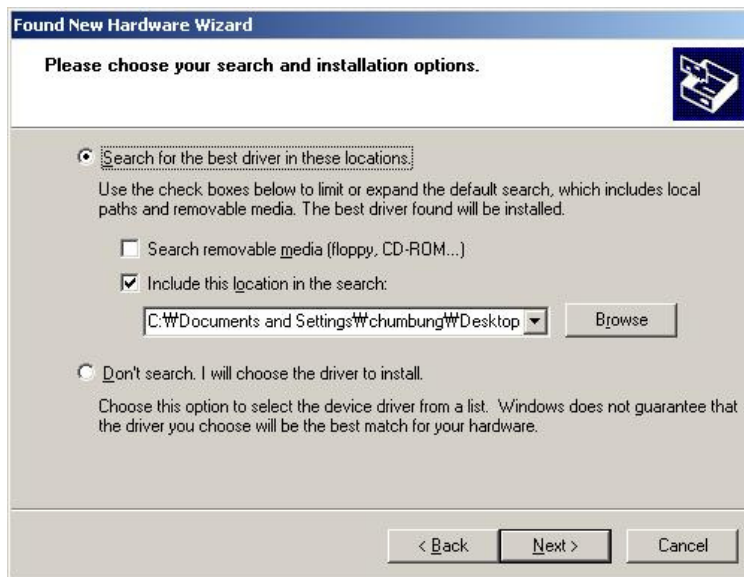
- 7) Found New Hardware Wizard



- 8) Choose *Install from a list or specific location(Advanced)*, then click on the *Next* button



- 9) Click on the *Browse...* button to locate your driver file(s)



- 10) Pass the Windows Logo Test by clicking on *Continue Anyway* button



- 11) Click on the *Finish* button.



Upgrade OS from PC to device

- 1) Remove microSD from device
- 2) If not done yet, please install the Device Driver (see previous section)
- 3) Copy the USB Download Utility into a folder on your PC. The files are:
dot180bulkusb.inf / dot170bulkusb.sys / USBDownload.exe
- 4) Press and hold the Power button, and press the Reset pinhole button
- 5) Release the Power button only when you see the first screen with flowers
- 6) At the bottom of the screen, a message should appear: "Waiting for Downloading..."
- 7) Using the provided USB cable, connect the device to your PC
- 8) On your PC, run the utility USBDownload.exe



- 9) Click on *File Open* and select the OS file on your PC. Or, you can also drag-and-drop the OS file onto the *Filename* area.
- 10) Click on the Download button to start the OS upgrade. A progress bar will appear on the PC utility. At the same time, device should show upgrade status.
- 11) When progress bar is finished, check device, it should say "Image Update Complete!"
- 12) Do a cold reset to reboot device (press Power and Reset at the same time)
- 13) Check new OS version number in Control Panel > System

APPENDIX

Device specifications

CPU	Intel® Monahan™ PXA320 624 MHz
Operating System	Microsoft Windows™ CE 5.0 Professional
Display	3.5" TFT LCD with touch screen, 260K color, 240*320
Memory	256M Flash, 128MB SDRAM
Communication	WiFi 802.11b/g Bluetooth 2.0 Class2
Telecom standards (optional)	Quad-band GSM/GPRS
Printer	2" (58mm) thermal printer, 600 dots/sec (75mm/sec), Roll φ30, 10M
MSR (optional)	ISO7811 – Track 1,2,3 support (Bi-directional)
IC card (optional)	ISO7816 – EMV2000 Level 1, 2 certified (1 * ID-1 full size card-slot, 3 * ID-000 SAM slots)
Barcode scanner (optional)	1D Laser 2D Imager
RFID (optional)	Mifare 13.56MHz
GPS (optional)	SIRFstar III
Camera (optional)	2 Megapixel with LED Flash
Fingerprint sensor (optional)	Swipe electric field sensor, 128x8 pixels at 500ppi
Extension slot	microSD card (supports SDHC)
Interface	USB 1.1 Host and Client
Other	Earphone / Microphone jack Speaker Integrated Microphone Vibrator motor
Environmental	Operating temperature: 0° C to 40° C Storage temperature: -20° C to 60° C
Battery	Rechargeable Li-ion battery 7.4V 1800mAh
Power adaptor	Input: 100V to 240V AC 50/60Hz 1.2A Output: 9.5V DC 3A
Dimensions (W*L*H)	76.2 * 220 * 37 mm
Weight	Full feature model 545g (including battery)

Cradle	RS-232 Serial port USB port Spare battery charging slot
Accessories	Hand strap Leather carrying case with shoulder strap

Environmental specs

- Drop test 1.2m on concrete floor (6 sides, 10 times each)
- Operation temp: -10 ~ 50 ° C
- Storage temp: -20 ~ 60°C
- Humidity: 25°C, 50%R.H.
40°C, 30%R.H.
60°C, 95%R.H.
25°C, 50%R.H.

Supported Bluetooth profiles

- Bluetooth HS/HF and Audio Gateway Service
Supports the Headset Profile (HSP) and the Hands-Free Profile (HFP) by using the Audio Gateway Service
- Bluetooth LAP (LAN Access Profile) and Configuration Utility
- Bluetooth PAN (Personal Area Network)
- SPP (Serial Port Profile)

Supported RFID types

- Mifare 13.56MHz